

CONGRESS DIRECTORY NUMBER

Archives of
PHYSICAL MEDICINE

Official Journal American Congress of Physical Medicine
(Formerly Archives of Physical Therapy)



EDITORIAL BOARD

EARL C. ELKINS, M.D.
Rochester, Minn.

FREDERIC J. KOTTKE, M.D.
Minneapolis, Minn.

FRED B. MOOR, M.D.
Los Angeles, Calif.

GEORGE M. PERSOL, M.D.
Philadelphia, Pa.

WALTER M. SOLOMON, M.D.
Cleveland, Ohio

ARTHUR L. WATKINS, M.D.
Boston, Mass.

ANNUAL SESSION, NEW YORK CITY, AUGUST 25-29, 1952

Copyright, 1952, by The American Congress of Physical Medicine

VOLUME XXXIII

MARCH, 1952

NO. 3

American Congress of Physical Medicine

30th Annual

Scientific and Clinical Session

and

Instruction Seminar

August 25, 26, 27, 28, 29, 1952



Official Headquarters
THE ROOSEVELT
New York, New York

EXECUTIVE OFFICES

30 NORTH MICHIGAN AVENUE

CHICAGO 2, ILLINOIS

INSTRUCTION SEMINAR

In Conjunction with the

30th Annual Scientific and Clinical Session AMERICAN CONGRESS OF PHYSICAL MEDICINE

August 25, 26, 27, 28, 29, 1952

THE ROOSEVELT

NEW YORK, N. Y.

WATCH THE ARCHIVES FOR ANNOUNCEMENT OF SUBJECT MATTER

Physicians and those therapists registered with the American Registry of Physical Therapists or the American Occupational Therapy Association will be permitted to enroll for the instruction seminar. The charge for a single lecture is \$2.00; for a full schedule of eight lectures, \$15.00.

For full information and application form address

**AMERICAN CONGRESS OF PHYSICAL MEDICINE
30 North Michigan Avenue Chicago 2, Illinois**

SUGGESTIONS FOR CONTRIBUTORS

While the ARCHIVES OF PHYSICAL MEDICINE is published by The American Congress of Physical Medicine, contributions of interest to those in the field of physical medicine are welcome from all countries of the world.

Manuscripts offered for publication in the ARCHIVES OF PHYSICAL MEDICINE should be sent to the Editorial Office, ARCHIVES OF PHYSICAL MEDICINE, 30 N. Michigan Ave., Chicago 2, Illinois.

Articles are accepted only with the understanding that they are contributions exclusively to the ARCHIVES OF PHYSICAL MEDICINE. Articles and their illustrations become the property of the journal.

INSTRUCTIONS FOR PREPARATION OF MANUSCRIPTS FOR PUBLICATION

ORIGINAL COPY Submit only the original copy of the article, but retain a carbon copy for use in correcting the galley proofs. Carbon copies are not acceptable for editing and typesetting purposes.

FORM Use an opaque white paper. Leave at least 2 inches of blank space above the title, and on all other pages leave at least 1 inch margin on each side and at the top and bottom of the page. Double space all parts of the manuscript — text, footnotes, legends, etc. **Be Sure That All Pages Are Numbered Consecutively.** Repeat the name of the first author on each page, upper right hand corner.

REFERENCES Have references numbered consecutively throughout the paper, and check to make sure that there is an insertion number in the text for each reference. References not referred to in the text will not be published. These references should be typed on separate pages at the end of the manuscript, since they are not on the same linotype machine as the rest of the article. The style should follow that of the *Journal of the American Medical Association* and/or the *Quarterly Cumulative Index Medicus*. The reference must include the name and initials of each author, and the volume number, page number and complete date of publication. If you do not know the standard abbreviations for the names of the journals, give the name in full. Home-made abbreviations are NOT acceptable and cannot be published. Please bear in mind that *The Lancet* and the *Journal-Lancet* are different publications. Inaccuracy in citing references may make it necessary to delete important footnotes.

ILLUSTRATIONS Only reproducible illustrations will be accepted. For graphs, use only white paper or coordinate paper ruled in blue. If it is necessary to retain the rulings in the published illustration, the rulings should be green or brown. Such rulings, however, do not reproduce well and the result may be unsatisfactory. If printing is used, it must be large enough to be readable when reduced to the size used in the ARCHIVES OF PHYSICAL MEDICINE. Line drawings must be distinct; only India ink should be used, and the lines should be of uniform thickness. Fountain pen ink is usually blue, will not reproduce as well and is not acceptable. Drawings showing tracings must be distinct throughout. Printing on tracings is best omitted unless done by an artist; freehand lettering usually is not uniform and is not acceptable unless clear, even and distinct. **THE AUTHOR IS BILLED FOR ILLUSTRATIONS.**

IDENTIFICATION OF ILLUSTRATIONS On the back of each illustration, there should appear the title of the article, the name of the author, the number of the illustration and an indication of the top of the picture.

INSERTION OF ILLUSTRATIONS Throughout the manuscript, indicate clearly where each illustration should appear. Your instructions in this regard will be followed as nearly as the layout will permit.

LEGENDS A legend must be supplied for each illustration. Legends should be brief but clear and should contain an explanation for every reference letter or symbol appearing in the illustration. The legends should be on a separate sheet of paper which should be numbered to follow the references. **DO NOT ATTACH THE LEGEND TO THE ILLUSTRATION,** but be sure that the numbers of the illustrations and legends correspond.

REPRINTS Gallies of the article will be mailed and a reprint order will be attached to the first galley. The ARCHIVES does not furnish free reprint service.

COPYRIGHT Matter appearing in the ARCHIVES OF PHYSICAL MEDICINE is covered by copyright. Permission will be granted on request for reproduction in reputable publications if proper credit is given. Reproduction for commercial purposes will not be permitted.

Contents—Mar. 1952

Volume XXXIII

No. 3

ARCHIVES OF PHYSICAL MEDICINE

(Formerly Archives of Physical Therapy)

30 North Michigan Avenue, Chicago 2, Illinois

Original contributions, exchanges and books for review should be forwarded to the Editorial Office. All business matters including advertising should be handled through the Executive Office, 30 N. Michigan Ave., Chicago 2, Illinois. The statements in the manuscripts published in the ARCHIVES OF PHYSICAL MEDICINE are made solely on the responsibility of the author. The American Congress of Physical Medicine does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in ARCHIVES OF PHYSICAL MEDICINE are for exclusive publication and may not be published elsewhere.

OFFICERS

American Congress of Physical Medicine

ROBERT L. BENNETT, M.D.,
Warm Springs, Ga., President.
WALTER M. SOLOMON, M.D.,
Cleveland, President-Elect.
WILLIAM B. SNOW, M.D.,
New York, N. Y., First Vice-President.
WILLIAM D. PAUL, M.D.,
Iowa City, Iowa, Second Vice-President.
HOWARD A. RUSK, M.D.,
New York, N. Y., Third Vice-President.
GORDON M. MARTIN, M.D.,
Rochester, Minn., Fourth Vice-President.
A. B. C. KNUDSON, M.D.,
Washington, D. C., Fifth Vice-President.
FRANCES BAKER, M.D.,
San Mateo, Calif., Secretary.
FRANK H. KRUSEN, M.D.,
Rochester, Minn., Treasurer.
WALTER J. ZEITER, M.D.,
Cleveland, Executive Director.
DOROTHEA C. AUGUSTIN,
Chicago, Executive Secretary.

EXECUTIVE COUNCIL

Arthur L. Watkins, M.D., Boston,
Chairman.
Norman E. Titus, M.D., Downingtown, Pa.,
Secretary.
William Bierman, M.D., New York, N. Y.
Earl C. Elkins, M.D., Rochester, Minn.
Kristian G. Hansson, M.D., New York, N. Y.
John Severy Hibben, M.D., Pasadena,
Fla.
O. Leonard Huddleston, M.D., Santa Monica,
Calif.
H. Worley Kendell, M.D., Peoria, Ill.
Miland E. Knapo, M.D., Minneapolis, Minn.
Disraeli Kobak, M.D., Chicago.
Frank H. Krusen, M.D., Rochester, Minn.
Walter S. McClellan, M.D., Saratoga Springs,
N. Y.
Fred B. Moor, M.D., Los Angeles.
Nathan H. Palmer, M.D., New Orleans.
William H. Schmidt, M.D., Philadelphia.
Frederick L. Wahrer, M.D., Marshalltown, Ia.
Robert L. Bennett, M.D., Warm Springs, Ga.,
Ex-Officio.

EDITOR EMERITUS

Disraeli Kobak, M.D., Chicago.

Subscription — In the United States, its possessions, and Mexico, \$7.00 yearly; Canada, \$8.00; elsewhere, \$14.00 the year.

Advertising rates on application. All advertising copy subject to acceptance by publication committee.

COPYRIGHT: Matter appearing in the ARCHIVES OF PHYSICAL MEDICINE is covered by copyright. Permission will be granted on request for reproduction in reputable publications if proper credit is given. Reproduction for commercial purposes will not be permitted.

Published monthly at Chicago, Illinois, by American Congress of Physical Medicine.

Entered as Second Class Matter, February 15, 1945, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

ORIGINAL ARTICLES

- The Role of Vocational Adjustment in Rehabilitation.
Everill W. Fowles, M.D.; Albert L. Cooper, M.D.,
and L. Kenneth Shumaker, M.A. 137
Discussed by Dr. Richard T. Smith.
- Use of Painting in Rehabilitation of Tuberculous Patients. A. Ray Dawson, M.D. 147
Discussed by Dr. Florence I. Mahoney, and Dr. Dawson.
- Ischemic Necrosis of the Anterior Tibial Muscle. Raoul C. Psaki, Lt. Col., MC, and Charles D. Schields, Lt. Col., MC. 153
- Adapted Wheelchair for Above-Knee Amputees. Carl M. Akwa, M.D.; Ray Piaskoski, M.D.; Edwin C. Welsh, M.D., and Leslie M. Root. 156
- A Device to Facilitate Standing From a Sitting Position: For Patients With Severe Residuals of Poliomyelitis. Leslie Blau, M.D.; Joseph Phillips, B.P.E., and Donald L. Rose, M.D. 159

- Editorials 163

- Medical News 166

- Book Reviews 167

- Physical Medicine Abstracts 169

- Directory, Members, American Congress of Physical Medicine 173

EDITOR OF THE MONTH

FRED B. MOOR, M.D.

Los Angeles, Calif.

Printed in U.S.A.

Members
Standing Committees of the
American Congress of Physical Medicine
1952

Advances in Education

Earl C. Elkins, M.D., Chairman.
Thomas F. Hines, M.D.
Donald L. Rose, M.D.
William B. Snow, M.D.

Balneology and Health Resorts

Hans J. Behrend, M.D., Chairman.
William Bierman, M.D.
Kristian G. Hansson, M.D.
Walter S. McClellan, M.D.
Duane A. Schram, M.D.
Samuel A. Warshaw, M.D.

Constitution and By-Laws

Ralph E. DeForest, M.D., Chairman.
Miland E. Knapp, M.D.
Florence I. Mahoney, M.D.

**Cooperation with Army, Navy, Public Health and
Veterans Administration**

Alvin B. C. Knudson, M. D., Chairman.
George G. Deaver, M.D.
John H. Kuitert, M.D.

Cooperation with Food and Drug Administration

Charles S. Wise, M.D., Chairman.
Nila Kirkpatrick Covalt, M.D.
Edward M. Krusen, Jr., M.D.
Bror S. Troedsson, M.D.

Finance

Walter M. Solomon, Chairman.
H. Worley Kendell, M.D.
Charles S. Wise, M.D.

**Foster, Encourage and Co-ordinate Research
Projects**

Sedgwick Mead, M.D., Chairman.
Donald J. Erickson, M.D.
Fred B. Moor, M.D.

Program

Walter M. Solomon, M.D., Chairman.
Arthur L. Watkins, M.D.
Walter J. Zeiter, M.D.

Gold Key Awards

Gordon M. Martin, M.D., Chairman.
George G. Deaver, M.D.
Emmett M. Smith, M.D.
Arthur L. Watkins, M.D.
Jessie Wright, M.D.

Legislation

William Bierman, M.D., Chairman.
Odon F. von Wersowetz, M.D.
Charles S. Wise, M.D.

Medical Economics

Herman L. Rudolph, M.D., Chairman.
Louis P. Britt, M.D.
Joseph Koczur, M.D.

Meeting Place

Walter J. Zeiter, M.D., Chairman.
Kristian G. Hansson, M.D.
Paul A. Nelson, M.D.
Solomon Winokur, M.D.

Membership

Harold Dinken, M.D., Chairman.
Robert W. Boyle, M.D.
Harry H. Samberg, M.D.

Nominating

Earl C. Elkins, M.D., Chairman.
Miland K. Knapp, M.D.
Arthur L. Watkins, M.D.

**Problems Affecting Physical and Occupational
Therapists**

William Bierman, M.D., Chairman.
Elizabeth Austin, M.D.
Donald A. Covalt, M.D.
Harriet E. Gillette, M.D.

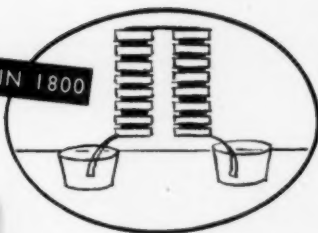
Public Relations

Frank H. Krusen, M.D., Chairman.
Edward H. Lowman, M.D.
Oscar O. Selke, Jr., M.D.
Charles Stansky, M.D.

Awards for Scientific Exhibits

William H. Schmidt, M.D., Chairman.
Earl C. Elkins, M.D.
H. Worley Kendell, M.D.
Charles O. Molander, M.D.

VOLTA'S BATTERIES IN 1800



a far cry
from the

Burdick

MS-2

MUSCLE STIMULATOR

Smooth faradic and galvanic currents —

- to restore muscle function
- to maintain muscle tone and volume
- for iontophoresis and electrolysis
- to repair injured tissue

THE BURDICK MS-2 OFFERS

- simple control
- fine current gradation
- wide selection of intensity
- absolute minimum of discomfort



THE BURDICK CORPORATION
MILTON, WISCONSIN

PHYSICAL MEDICINE AND REHABILITATION **

The following services are approved by the Council on Medical Education and Hospitals, and the American Board of Physical Medicine and Rehabilitation. Residencies in this specialty have been approved without specifying the number of years for which they are accredited. The Board will give appropriate credit for training in these hospitals on an individual basis.

Hospitals, 43 Assistant Residencies and Residencies, 87

Name of Hospital	Location	Chief of Service	Inpatients Treated	Number of Treatments	First Year Residencies Offered*	Total Residencies Offered*	Beginning of (Month)
UNITED STATES ARMY							
Lettman Army Hospital*	San Francisco	R. C. Psaki	3,330	74,961	—	—	—
Fitzsimons Army Hospital*	Denver	H. B. Luscombe	19,483	258,315	1	4	—
Army Medical Center*	Washington, D. C.	J. H. Kuitert	6,755	262,456	3	8	—
VETERANS ADMINISTRATION							
Veterans Admin. Hospital*	Long Beach, Calif.	R. N. Nyquist	10,922	195,816	1	2	—
Veterans Admin. Hospital*	Fort Logan, Colo.	F. J. Fricke	907	36,326	—	—	—
Veterans Admin. Hospital*	Birmingham, Ala.	L. B. Newman	5,665	450,711	—	—	—
Veterans Admin. Hospital*	Wadsworth, Kans.	L. Blau	3,169	192,760	—	—	—
Veterans Admin. Hospital*	Frammingham, Mass.	F. Friedland	7,000	210,000	1	2	—
Veterans Admin. Hospital*	Jefferson Bldg., Mo.	E. H. Weissenb'g	2,215	77,491	1	1	—
Veterans Admin. Hospital*	New York City	A. S. Abramson	13,819	314,026	3	9	—
Veterans Admin. Hospital*	Cleveland	H. T. Zankel	6,411	81,929	1	1	—
Veterans Admin. Hospital*	Portland, Ore.	E. W. Fowles	4,964	110,420	1	1	—
Veterans Admin. Hospital*	Aspenwall, Pa.	S. Machover	2,516	106,131	—	1	—
Veterans Admin. Hospital*	Houston, Tex.	B. L. Boynton	1,582	6,894	1	1	—
NONFEDERAL							
Los Angeles County Hospital*	Los Angeles	E. Austin	—	91,836	—	1	165
White Memorial Hospital*	Los Angeles	F. B. Moor	195	—	1	1	129
University of Colorado Medical Center	—	—	—	—	—	—	—
Colorado General Hospital*	Denver	H. L. Dinken	2,580	45,876	1	3	75
State of Connecticut Vet. Home & Hosp.	Rocky Hill, Conn.	R. L. Bennett	—	10,473	3	3	—
Emory University Hospital*	Emory Univ., Ga.	R. L. Bennett	1,719	10,473	1	1	59
Georgia Warm Springs Foundation	Warm Springs, Ga.	R. L. Bennett	973	104,401	1	3	250
Cook County Hospital*	Chicago	D. Kobak	7,501	37,516	—	—	—
Michael Reese Hospital*	Chicago	C. O. Molander	2,254	19,549	1	1	25
Northwestern University Medical Center	Chicago	—	13,580	40,962	—	—	—
Research and Educational Hospitals*	Chicago	H. W. Kendall	5,688	11,769	1	3	85
University of Kansas Medical Center*	Kansas City, Kans.	D. L. Rose	2,456	42,310	1	1	100
Massachusetts General Hospital*	Boston	A. L. Watkins	2,925	31,999	0	9	41.66
University Hospital*	Ann Arbor, Mich.	—	—	—	—	—	—
University of Minnesota Hospital*	Minneapolis	M. Knapp	20,409	29,436	4	4	—
Mayo Foundation	Rochester, Minn.	F. H. Krusen	—	—	2	6	135
Barnes Hospital*	St. Louis	S. Mead	9,759	9,759	0	1	—
Bellevue Hosp., Div. III, N. Y. Univ.*	New York City	H. A. Rusk	4,058	116,705	1	7	80
Goldwater Memorial Hospital*	New York City	M. Dacso	733	50,706	1	2	80
Hospital for Joint Diseases*	New York City	J. Weiss	—	84,631	1	1	40
Hospital for Special Surgery	New York City	K. G. Hansson	20,806	40,810	1	1	160
Mount Sinai Hospital*	New York City	W. Bierman	11,942	36,970	1	1	50
New York City Hospital*	New York City	F. K. Safford, Jr.	1,138	41,088	1	1	130
Presbyterian Hospital*	New York City	W. B. Snow	35,885	103,544	1	1	208
St. Luke's Hospital*	New York City	R. Muller	900	98,964	1	1	40
Rehabilitation Hospital	W. Haverstraw, N. Y.	M. Hoberman	5,888	408,371	1	1	225
Cleveland Clinic Hospital*	Cleveland	W. J. Zeiter	17,062	38,475	1	4	—
Hospital of the University of Pa.*	Philadelphia	G. M. Piersol	1,636	35,639	0	1	—
Philadelphia General Hospital*	Philadelphia	A. A. Martucci	2,827	22,723	1	1	75
Medical College of Virginia—Hosp. Div.*	Richmond, Va.	W. J. Lee	4,575	40,327	—	—	46.50

The star (*) indicates hospital approved for intern training.

The dagger (†) indicates temporary approval.

* Residencies open to women.

** Reprinted in part J. A. M. A. 147:140 (September 29) 1951.

ARCHIVES AVAILABLE ON MICROFILM

The ARCHIVES OF PHYSICAL MEDICINE is now available to libraries on microfilm. A microfilm edition will be sold only to bona fide subscribers of the ARCHIVES, is not for resale and will be distributed at the end of the volume year.

For further information, inquiry should be directed to UNIVERSITY MICROFILMS, 313 North First Street, Ann Arbor, Mich.

TECA CD4P

*a low price generator with
variable frequencies for
conventional low-volt therapy*

- Muscle Stimulation • Ion-Transfer Therapy
- Electro Diagnosis • Medical Galvanism

AVAILABLE CURRENTS:

A. C., from 18 to 3000 cycles per second in sine wave and square wave.

D. C., straight and any desired degree of pulsation.

AC and DC PULSES of 1 m/s duration (may be regulated from 1 to 100 pulses per second).

ALL CURRENTS SURGING (except pulses) from 6 to 60 surges per minute.

SUPERIMPOSED CURRENTS; any alternating current can be superimposed on any direct current, or vice versa.

OSCILLOSCOPE OPTIONAL; CD4P may be equipped with a 3" oscilloscope.

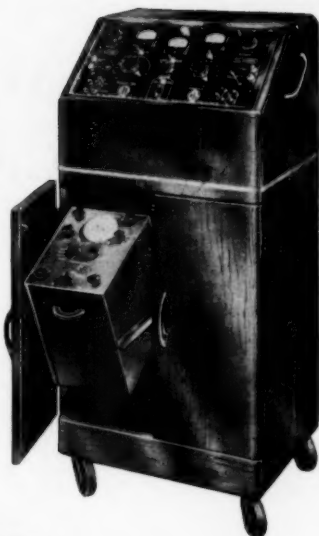
TWO CIRCUITS; separate circuits and controls for A. C. and D. C. for easier operation and wider range of application.

For literature, price, demonstration, write Dept. A-3.

TECA CORPORATION 220 WEST 42ND ST.,
NEW YORK 36, N. Y.



*Simple To Operate
Reliable • Efficient*



DEADLINE ONLY 3 MONTHS AWAY



After June 30, 1952, ALL MEDICAL DIATHERMY MACHINES in order to be Lawfully Used must conform to the requirements of The Federal Communications Commission, . . . regardless of whether or not the machines cause interference with television or other authorized radio communications.

If you are now using a Diathermy Unit that does not conform to requirements of the F.C.C., Immediate Action is Recommended by the Journal of the American Medical Association, June 2, 1951, issue, Page 481.

Let us send you complete information on the FISCHER DE LUXE MODEL "400" SHORT WAVE DIATHERMY UNIT.

FISCHER DE LUXE MODEL "400" offers inductance applications with the Patented Adjustable Induction Electrode or inductance cable and can also be used for coagulation and cutting in electrosurgical procedures.

Patented adjustable Induction Electrode, designed especially to fit any part of the body, gives even distribution of heat over entire treatment area.

FISCHER DE LUXE MODEL "400" is the highly efficient, practically trouble-free, self-excited oscillator type—no crystal control or master oscillator.



- F.C.C. TYPE APPROVAL D-500
- UNDERWRITERS' LABORATORIES APPROVAL
- CANADIAN TYPE APPROVAL Number 7



A digest of the New F.C.C. Ruling on the use of Diathermy Equipment will be sent free and without obligation.

—♦—

H. G. FISCHER & CO.
FRANKLIN PARK, ILLINOIS

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE

LONDON
JULY 14TH—JULY 19TH
1952

President

THE RIGHT HON. LORD HORDER, G.C.V.O.

Vice-Presidents

BERNARD BARUCH, Esq., U. S. A.
DR. P. BAUWENS, Great Britain
DR. G. BOURGUIGNON, France
DR. S. CLEMMESSEN, Denmark
DR. F. S. COOKSEY, O.B.E., Great Britain
DR. F. D. HOWITT, C.V.O., Great Britain
DR. F. H. KRUSEN, U. S. A.

Executive Committee

Officers:

<i>Chairman</i>	Dr. P. BAUWENS
<i>Honorary Treasurer</i>	Dr. F. D. HOWITT, C.V.O.
<i>Honorary Secretary</i>	Dr. A. C. BOYLE
<i>Assistant Honorary Secretary</i>	Dr. D. L. WOOLF

Office

45 LINCOLN'S INN FIELDS, LONDON, W.C.2
Cable Address . . . COLLSURG, LONDON

HISTORICAL NOTE

During recent years the view has been widely expressed that an International Congress of Physical Medicine should be held, and at the International Congress on Medical Electronics held in Brussels in 1948, it was suggested that London might be a suitable place for such an event. To this end the British Association of Physical Medicine was informally approached. The Council of this Association felt strongly that such an endeavor should be a regularly recurring event organized by a permanent international body, and undertook to foster the formation of such an international body.

As a preliminary step, the Interim Committee of the International Federation of Physical Medicine was set up in May, 1950, under the Chairmanship of Dr. Frank Krusen, Rochester, Minnesota, U. S. A., with Dr. Svend Clemmessen, Copenhagen, Denmark, as Vice-Chairman. This Interim Committee issued reports on its activities and drafted regulations which were circulated to national Associations of Physical Medicine, with the object of securing international support and the nomination of national representatives. As a result of this Committee's further efforts, membership of the Council for the Co-Ordination of International Congresses of Medical Sciences was secured. Having decided that the first Congress under its auspices would be held in London, the Committee invited the British Association of Physical Medicine, as the national association concerned, to appoint a small committee with powers to form an independent Board of Management responsible for the organization of an International Congress of Physical Medicine in 1952. At the Congress, which will be held in London, a meeting of the national representatives will be called and asked to form the International Committee of Physical Medicine.

THE ROLE OF VOCATIONAL ADJUSTMENT IN REHABILITATION*†

EVERILL W. FOWLKS, B.A., M.A., M.D.

Chief, Physical Medicine Rehabilitation Service

ALBERT L. COOPER, B.S., M.D.

Resident, Physical Medicine Rehabilitation Service

and

L. KENNETH SHUMAKER, B.A., M.A.

Chief, Vocational Rehabilitation and Education

Physical Medicine Rehabilitation Service, Veterans Administration Hospital

PORTLAND, OREGON

Introduction

The purpose of this paper is to delimit and describe the work of the hospital vocational adviser rather than to discuss the general nature of all the rehabilitation services. Since the psychological study of the patients is essential, a word on this subject must be inserted here. Psychology itself is one of the oldest and yet one of the newest of the so-called social sciences; yet it is even today attempting to find itself among the sciences and professions. Those who are familiar with "The American Psychologist" and its issues over the last five years will be well aware of the contemporary efforts to define various specialties within the field of psychology. Suffice it to say for our purposes that the differentiation between psychology and demonology is 125 or 150 years old and that the tools with which the psychologist works have undergone considerable refinement, especially during the last 30 years. The ancestors of modern psychology were concerned with what today is known as abnormal psychology. From the medical point of view there has at times been a great deal of action based on preconceived ideas of what mental disorders were. The field of psychiatry is supreme, in our thinking, in the field of abnormal psychology. From the point of view of society itself, nevertheless, and especially the law, a kind of "legal psychology" developed in which the judge has attempted to define a person "legally sane" regardless of other considerations. It is only since the beginning of the twentieth century and possibly since the development of the mental hygiene movement that a new phase has appeared, sometimes called "personology." The individual who is a close student of human beings is willing to be eclectic and to accept hypotheses, or develop hypotheses of his own, testing these by approved scientific method in the hope that he may ever come nearer to the truth.

The importance of the contribution which could be made by psychology to the rehabilitation of the disabled was recognized by Dr. Ira Scott and his staff in the Veterans Administration long before the need for the Vocational Advisement Service of this agency of government was made acute by World War II. Dr. Scott and his staff were ready to meet the challenge of the moment; and the Manual of Advisement and Guidance developed under his direction is, in the opinion of many, still the greatest single, concise contribu-

* Read before the 29th Annual Session of the American Congress of Physical Medicine, Shirley-Savoy Hotel, Denver, Colorado, September 6, 1961.

† Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own studies and do not necessarily reflect the opinion or policy of the Veterans Administration.

tion to the field of rehabilitation, integrating the use of known principles of psychological study of the individuals and groups with the other segments of the rehabilitation services. It is this document which is presently the guiding light of the service in Veterans Administration Hospitals. It is this document which points clearly, even if by indirection, to the vast difference between the clinical psychologist and the social psychologist who is known as simply a "psychologist," and is given the title of Chief of the Vocational Rehabilitation and Education Section. He is often referred to simply as the vocational adviser or as the hospital adviser.

The vocational adviser who works with the rehabilitation services of the hospital is a psychologist who has, in the main, two types of equipment. The first we shall call the psychometric and the second we shall call the clinical.

Equipment of the Vocational Adviser

The psychometric equipment includes all those instruments which have been used with a sufficiently large number of people to obtain data available as to the performance of a group. These data have been treated by statistical procedures, sometimes called the "arithmetic of human welfare," to establish certain estimates of parameters based on the study of samples of population. The responses of the *individual* (referred to by the psychologist as the *subject*) who is being estimated are predetermined as right or wrong within definite limits. By the use of psychometric equipment, therefore, any subject may be compared with a known sample of the population and given a rank of some kind such as a standard score, a T-score, a centile, or the like, which shows him in comparison with that specific group.

Many of the psychometric instruments available today have been in existence long enough so that there is a substantial body of experience with them, and the psychologist skilled in using these is able to gain a great more from them than the mere mechanics of scoring and assignment of normative ranks would imply.

The clinical techniques available to the psychologist are less comforting in that they have no refuge of numerical preciseness in which to express findings. The best of the clinical materials have no preconceived rights and wrongs as to the responses. The subject himself reacts to the stimulus outside him freely and expresses himself freely by the drawing of a house, a tree, or a person; by the tracing of certain lines which are presumed to follow a pattern set before him; by describing what he sees in the formless splotch of colored ink on a piece of paper. He presents his reactions in his own individual way. The satisfactory use of clinical techniques is dependent far more upon the breadth and depth of the psychologist himself and his wide knowledge of human beings than upon strict adherence to a technique for the manipulation of data.

Psychological testing at its best is the study of the reactions and performance of a given subject under well-controlled conditions over a relatively brief time, for the purpose of ascertaining how this individual will fit into the society of which he is a part. Psychological testing is an essential part of the equipment of the hospital adviser.

But the world in which patients will live after they have left the hospital is a competitive world, where satisfactory adjustment is reached through effort and ability and through the opportunities presented for the utilization of the right man in the right place. It is for this reason that the hospital adviser must have at his disposal a fairly large and workable file of occupational information, as well as contacts with potential employers who may be able to utilize the services of patients after their discharge. The main-

tenance of an adequate occupational information file is a frustrating challenge in many ways, because the occupational picture changes rapidly. Long-time trends for a state or a nation may be available; but these are somewhat like the Dow-Jones averages on the stock market. They indicate broad movements but they have little to do with *specific employments*. General trends have as little to do with Joe Blow as elevator man in the Commerce Building on the corner of Fourth and Pine Streets in Any City, U. S. A., as do the Dow-Jones averages with whether or not the stock of the Tidy Fire Fighter selling at three and a quarter today will be worth ten thousand dollars in ten years. The file of occupational information must, of course, contain the nation-wide data; but there is no substitute for the specific, personal knowledge of what is going on in a real community, and the exact knowledge as to how one particular patient may find his best opening for employment.

The patients themselves, who are the subjects of Medical and Vocational Rehabilitation, are infinitely varied. Accident and disease will attack with impartiality the best trained and most broadly educated professional or executive person as they will the "wetback" who has come to the United States in the hope of finding his own particular pot of gold at the foot of his rainbow. Long-time trends as regards disease, accident, employment, or any other specific data may be estimated. Were it not for this, life insurance companies would be powerless to remain in business. The insurance company, however, is playing against known odds. The hospital adviser is asked to pinpoint patients in much the same way as an insurance company would be asked to pinpoint one of its risks if it were required to say with certainty that Jane Doe would die at 4:30 in the afternoon on August 12, 1961, in an automobile accident on Highway 30 just outside Cheyenne, Wyoming.

It is for this reason, therefore, that the hospital adviser tries constantly to make "good errors" rather than direct hits.

The vocational adviser must have a frame of reference in which to study his patients, and the following is suggested tentatively. The social sciences are noted for the inexactness of their data and the paucity of their constants. It is for this reason that these as constants for all people are offered with some temerity; however, they do form the main essentials of the frame of reference in which to consider patients: (1) all human beings like to be liked; (2) all human beings require security; (3) all human beings require competition; (4) all human beings possess a "moral floor," and (5) all human beings must communicate with others. These catch phrases need explanation.

Under the first of our headings, "all human beings like to be liked," is placed that component of personality which is regarded as one of the essential constants and which covers a vast amount of territory in the psychological literature. It includes that broad and often abused word "love," for which we have but one symbol in the English language. It covers what the ancients called *agapao*, *fileo*, and *eratio*. It covers all those components of the personality involving the out-reaching need for approval, affection, and family support. It carries with it a bit of the old adage that "it is possible to catch more flies with honey than with vinegar."

"All human beings require security" is the constant which includes everything from the first demands for warmth and nourishment upon the part of the helpless infant to the need for some assurance to the individual of his place in society, recognized with appropriate dignity and providing satisfactory societal and economic rewards.

The obverse of this constant is the need for competition, which in its way may be said to be the need for *insecurity*. If the need for security be satis-

ated, a kind of stupefaction of the individual takes place and emotional and intellectual atrophy results. This constant may be stated in the terms of another adage: "Every dog requires a certain number of fleas to keep him happy."

The fourth constant, "possesses a moral floor," applies to the great mass of socialized human beings far more clearly than it does to that small and baffling group often referred to as having inadequate personalities, or sometimes as being psychopathic deviates. Until either utter inadequacy or sheer disintegration has tended to obliterate almost entirely this constant, the individual responds to social stimuli according to an observable and describable code. There are certain things which he regards as good to do. There are certain other things which he regards as evil. The thesis here is that a code exists, not that all people have the same code. If an individual has been taught from infancy that it is virtuous to steal and criminal to be caught, he has guilt reactions only as the result of being caught.

All human beings must remain in communication with their fellows. Throughout the entire animal world there seems to run a necessity for communication, ranging from the tapping of antennae by ants to the invention of that terrifically complicated way of impeding communication among human beings, known as language. It is the inability to satisfy the need for communication that creates that utter loneliness and isolation frequently found in its purest form in the aged, whose associates have all passed away and whose ties with the living are but loosely fashioned. One of the most terrible sentences that can be inflicted upon a prisoner is that of solitary confinement, which prohibits by any physical means communication with the world of which he has been a part. Even though ascetics have immured themselves behind cloistered walls, their demand for communication is satisfied by real or fancied contacts with the Divine or the spiritual world.

These constants have been sketched but lightly owing to the brevity of time; but they form essential elements of the frame of reference in which the patients on the rehabilitation service of a hospital are considered.

The Interview

There is a right and a wrong time for the referral of patients to the vocational adviser, and the development of rapport between the patient and the psychologist is an extremely delicate part of the relationship. Mechanical devices used to establish rapport are the individual survey and the preliminary interview. Already, before the patient has seen the psychologist, many facts of his history have been accumulated in his record and these facts are taken from the records so that they do not have to be recaptured. This means that the patient's chart goes to the hospital adviser far enough ahead of the interview so that vital statistics and medical history are at his disposal. The interview can start on common ground. The adviser may rapidly check over the facts of birth, military service, marriage, and divorce, and then give most of his emphasis to the social history, educational background and work history which have, heretofore, been of less importance to the physician or to the social worker. It is all too frequently found in experience that a patient may have reported, as far as his history is concerned, that he is married. He has not disclosed the fact that he has been widowed or divorced. The interview is one of the most delicate parts of the entire relationship and may not be entrusted to unskilled hands. It is quite possible that there will be points revealed in the interview which should be regarded as privileged information and should remain only in the locked files of the adviser. This point needs no underlining to a group of physicians.

Areas Tested

Upon the establishment of rapport and the development of the interview, the patient must very quickly have the idea implanted in his mind that he is to help himself through his own efforts almost entirely and that with only a little push here and there from those outside him will he be returned to society as a wholesome, producing member. It is for that reason that the use of testing instruments must be delicate.

Areas which may be sampled by testing have been grouped under several heads, each of which will be briefly characterized.

1. Where do the interests of the patient lie and how strong are these interests? It has been said, "Where a man's treasure is, there will his heart be also." Much work has been done in the field of estimating interests, and many useful inferences have been drawn on the basis of interest tests. This is hardly the place in which to advertise certain specific testing instruments, but it is safe to say that most of them provide a kind of scatterbore shotgun with which to begin hunting. The interest test itself is often a long one of many items and the patient becomes fascinated by the wide variety of choices he must make. Occasionally he returns the paper with very poor response because he says nothing interests him. Sometimes it is very well to approach him with the idea that the test is played like a game and he is to pretend that he must make certain choices rather quickly, deciding on the spur of the moment without too much reflection as to whether he is qualified or has the physical ability to do the things he thinks he might like to do. The literature of interest testing is replete with many references, among which the consensus seems to be that the wider and richer the pattern of interests, the more hopeful it is that constructive work with the patient may be accomplished.

2. Another of the areas that may be sampled by testing means is that of personality. Personality schedules have their strong defenders and their vigorous attackers. They have many faults, but, nevertheless, an estimate obtained from the patient himself of some of his own attitudes is certainly very useful. Some notion may be gained of his tendency to be impulsive or to be reflective, to be tolerant or intolerant, to be secure or insecure; these are a few of the things that may be surveyed by pencil and paper. Often these surveys are indicative only of the need for more searching study of the personality. The term "personality" itself has been used very loosely to cover every phase of intrapersonal and interpersonal attitudes and relationships which would have a bearing upon suitable social and economic adjustment. It has often been said that more people are fired because the boss doesn't like them than because they are incompetent. It has been found that it is just as essential in satisfactory job placement to have the individual in an environment, human and physical, in which he can accomplish his best work as that he actually have a kind of work which he can do and do well.

3. Another area which may be estimated by test devices is that of achievement — how much know-how does the patient have. Many of the achievement tests are based upon academic experience; some of them are based upon the accumulation of information; and some are based upon the specific knowledge that may be acquired through familiarity with mechanics, music, art, or some specific field. Academic records supplement at this point as also does work by educational, manual arts, or occupational therapists. Whatever know-how has accumulated over the years as the result of either schooling or experience represents part of the essential equipment of the patient and is estimated as accurately as possible.

4. Still another area that may be investigated by tests is that of special aptitudes. In some cases, work has been analyzed so that certain basic

components have been isolated. An excellent example of this is one of the musical aptitude tests which segregates rhythm, pitch, tonal memory, and the like almost abstractly without regard for the esthetic side of musical accomplishment. Our aptitude tests generally are at best screening devices rather than the sort of instruments that would be most useful to the hospital adviser. The screening type of aptitude test is a psychometric one calibrated against a population in norms. By a device of this sort, a psychometrician in a personnel department in any factory can say with some safety that an applicant for a job has so many chances in a hundred of succeeding if he is employed, and he can indicate whether or not it is wise to risk hiring the person in question. A great deal more research must be done in job analysis and vocational study itself before the aptitude test will be improved to that state of refinement which is clearly indicated as essential in a hospital. Existing aptitude tests must be supplemented by work on the part of other members of the team before inferences may be safely made. Such tools as we now have, we use as far as it is possible.

5. Another area which has usually been called "intelligence" and which must be skipped over lightly, at this time has been subdivided for our purposes in the hospital into two: (a) Brightness and (b) Reasoning.

a. Tests overlap in estimating these two components; but every effort is made to find tests which indicate that the subject is bright enough to acquire new information and to use the content of knowledge. Some tests are semi-clinical and these have proved most useful in this search and have thrown a great deal of light upon the informational content, ability to concentrate, memory, and other characteristics of the subject which enable him to increase his knowledge intake.

b. Problem solving or reasoning is the other area of intelligence testing in which an estimate is obtained as far as possible. The literature of the latter is replete with differences between concrete and abstract thinking. Some subjects are able to think in the terms of highly concrete and specific physical entities, and their language is composed largely of symbols of that which is physical, which possesses mass, density — which can be manipulated. To some subjects, two plastic sticks placed to form a "v" with the apex away from them, this figure is always a roof. The world of experience is often translated into very specific, concrete content that has to do with particularized thinking and to them there is no generalization conforming to certain laws or theorems. Abstract thinking has been regarded as one of the highest forms of intelligence, as was pointed out many years ago by Immanuel Kant when he differentiated between the faculties of understanding and of judgment. In speaking of the faculty of understanding he pointed out that many lawyers, physicians, or others in professions might learn the rules by which their work was done and obey these rules perfectly in carrying out their work; however, some lack the power to perform the subsumptions necessary to the faculty of judgment. To Kant the faculty of judgment was the mother-wit, the absence of which could not be remedied by any schooling.

The existing test materials overlap in many ways. The worker who is attempting to study his subject with any degree of accuracy will explore by their means as far as time and conditions permit. Toward the close of this exploration, it has been found helpful to bring the subject (the hospital patient) before the entire staff of the rehabilitation service so that a consensus may be reached and a course of action decided for medical rehabilitation, to stimulate activity on the part of the patient himself. The conclusions reached by the Rehabilitation Board, however tentative they may be, are put into writing and entered upon the patient's chart so that all members of the reha-

bilitation team may act in concert to assist the patient's thinking as regards his future. For example, if it is thought that he should consider clerical work in the field of business, the educational therapist may then try him out with typing and filing and bookkeeping on a preliminary basis before final determination to make the sacrifice necessary for retraining or for undertaking an entirely new field in which to seek employment. It is at this point that the "good error" principle of the study is paramount and every effort is made to see whether or not the patient will become a file clerk, a bookkeeper, a general accountant, a cost accountant, or a certified public accountant.

Under present conditions it is very useful for the hospital adviser to discuss with the employer beforehand as many of the patient's problems as possible, trying to give the employer some insight into the vocational handicap and its management. This saves a great deal of embarrassment on both sides. Many employers are charitable to a fault; and, especially when veterans of a war are concerned, are more than anxious to cooperate. Some knowledge of how best to meet the situation without embarrassment frequently spells success when failure otherwise would have been certain.

It has been found that personnel departments, particularly those charged with some responsibility as to the hiring of qualified personnel, are more receptive toward information that will better enable them to accept a new employee and keep him. Such personnel departments generally strive to maintain turnover at a wholesome minimum.

Some Charts in Summary

At this point it seems advisable that we should turn away from some of the general statements that have been made and look specifically at the graphic representation of some of the findings in an actual hospital situation.

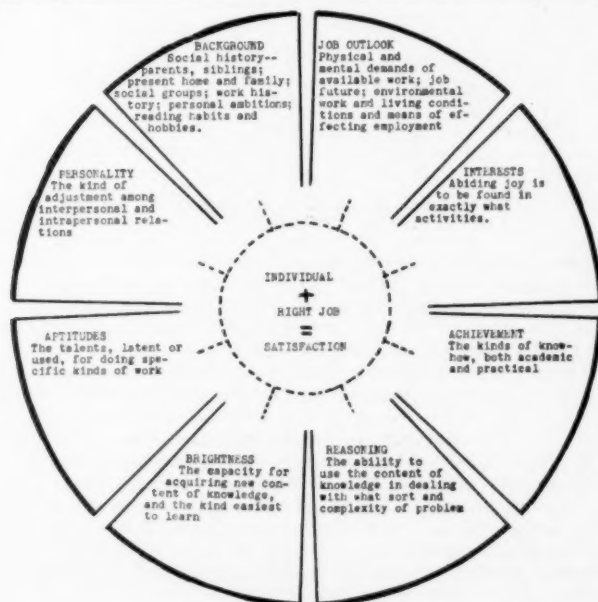


Fig. 1. — The Rehabilitation Target.

Figure 1 is The Vocational Rehabilitation Target. Equal space is given in this figure to each of the areas in which testing is done, plus two more: Background, and Occupational Information. These two segments are placed at the top of the chart, and are intended to stand for the bulk of the information obtained by means other than testing. The other areas all refer to information obtained largely by means of testing, supplemented by observation of the patient by various members of the Medical Rehabilitation team cooperating in the pre-vocational phases of vocational advisement. The equality of size does not intentionally indicate that equal stress is given in each case to each phase of the study; the emphasis is determined by the individual problems of each patient. Each is, however, of equal importance in reaching a decision with the cooperation of the patient as the best and most clearly defined course he should follow in his search for work that will be profitable to himself and to society.

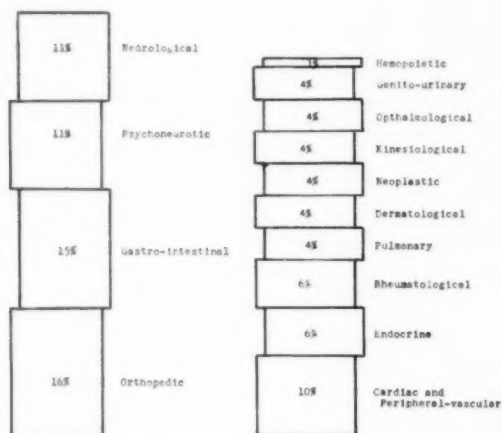


Fig. 2. — Proportionate Referrals for Vocational Rehabilitation as Regards Broad Diagnostic Categories.

Figure 2 indicates the proportion of cases from the standpoint of the medical diagnosis. Many patients carry diagnoses covering more than one of these areas; but the major one only was used in this compilation. For example, it is quite possible for a patient who is receiving compensation for a service-connected orthopedic disability also to have non-service-connected ophthalmological or kinesiological disabilities. Much space could be devoted to the complications of any given case because of the mental and physical conditions which prevail. About all that can be done by means of this chart is to underline the complexity of the problems as a whole presented to the Physical Medicine Rehabilitation Service in each individual case. It should be observed that the classification of pulmonary disorders shown here does not include any patients known to be suffering from tuberculosis. The experience in this hospital of less than a year with tuberculous patients is deemed insufficient to warrant their inclusion.

Figure 3 shows the proportional pattern of the objectives as planned in the various counseling programs completed in the hospital. The terminology

on this chart is based on the Dictionary of Occupational Titles and could be broken down into a much greater refinement. For example, the classification "professional, semi-professional, and managerial," which covers in the Dictionary the code numbers between 0-0. and 0-9., includes teaching, photography, and technical work in connection with laboratories, newspapers, radio

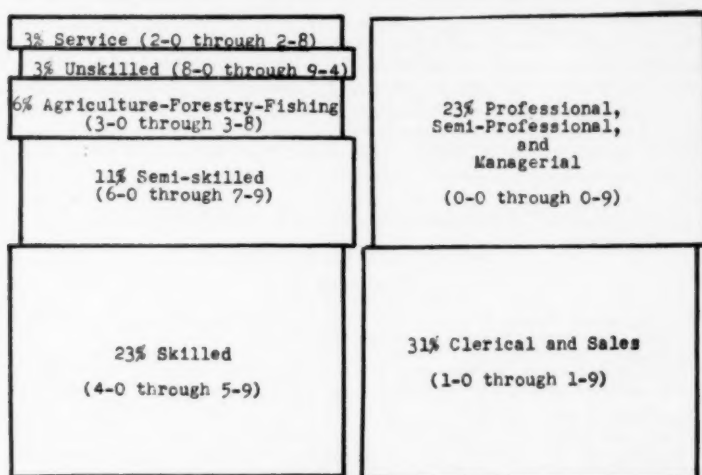


Fig. 3. — Proportional Selection of Vocational Objectives, World War II Cases, Through Counseling.

and television, and many others. The clerical and sales field is relatively the largest because the turnover in this field is sufficient to provide employment opportunities much more readily than in many of the other fields. The skilled worker area includes the apprenticeable trades. Owing to the fact that many apprenticeships are no longer open to men past twenty-five years of age, this area should be smaller in the future as the age of the veteran's group increases, making it more difficult to place workers in the skilled trades. The hospital used in this report is located in the Northwest, where forestry and fishing are major occupations. Many of the jobs in these areas require a degree of physical fitness beyond that which disabled veterans possess. Frequently those who are associated with work in forestry or fishing enter through the semi-professional employment reflected in the first category discussed. There is a strong aversion on the part of hospital patients to entering an unskilled occupation or to entering one of the service occupations. Among the service occupations, barbering and police work are the two most often requested, and frequently are highly unsuitable to the applicant who desires to enter them.

These charts have given a partial overview of conditions actually existing in a single hospital and summarize data from 1,028 cases over a four-year period. This report hardly represents research work in the purest sense. It is a record of what has happened. There are numerous problems in connection with the rehabilitation work which require research; but the turnover of patients is so rapid, and controls are so difficult to maintain, that research problems of themselves have so far remained problems. It is a hope

maintained by all members of the staff in this hospital that some method of carrying research adequately will be developed and some solutions to problems worked out.

This discussion has attempted to provide some basis for an understanding of the work of vocational adjustment as a part of the rehabilitation service in a hospital. No doubt it will seem amusing even to its authors at some date not too far hence, because the employment of vocational advisement in connection with medical rehabilitation is very new and the guidelines within which his specialty will develop are rapidly coming into clearer perspective. In the few short years from which there is any experience by which to judge, the hospital adviser has been found most useful in completing that unfilled part in the teamwork required of the medical rehabilitation services in a hospital in order to return the vocationally handicapped human being to society with the firmest expectation that he will be an independent and self-supporting member of that society, and not an object of sympathy or pity — or public charity.

Discussion

Dr. Richard T. Smith, (Philadelphia): At a time when a young specialty, such as rehabilitation, is having very distinct "growing pains," a paper dealing with one of those pains is most welcome and timely.

Rehabilitation, like cerebral palsy, poliomyelitis, atonic power and innumerable other words has quickly caught on. Layman and physician alike speak of rehabilitation in a familiar, offhanded manner. If most folk were asked to define the word rehabilitation, there would be as many different definitions as if ten people were asked to define the Foreign Policy of the United States.

The American Congress of Physical Medicine recognizes the need for the whole rehabilitation of a patient. It is in this specialty group that the techniques must be developed before they are passed on to the medical profession in general. As the "growing pains" are gradually eliminated the true meaning of rehabilitation will become less nebulous and more specific.

I feel sure that members of the American Congress of Physical Medicine are in complete agreement about the application of psychiatry and psychology in the general field of rehabilitation, not just in the rehabilitation of the psychiatric patient.

Ideally, rehabilitation should be conducted by a team, composed of a specialist member for each of the medical fields involved during any individual rehabilitation program. Such a team, unfortunately, is not practical in the majority of our medical institutions, for in-patient or out-patient care. In actual practice, most of the time, those members of the team who are available are required to "double in brass," indeed, all too frequently the team consists of a "one-man-band."

At the moment, one member of the ideal rehabilitation team is under consideration. In discussing the role of the rehabilitation psychologist, there are certain theoretical

and practical considerations which need mentioning.

Theoretically, the psychologist can, by psychometric testing, plus a knowledge of the patient's background and personality, determine his vocational ability to return to a useful and productive occupation. This information should then be a guide for the physical, occupational and psychiatric rehabilitation of the patient.

Practically,

1. The psychologist should have an opportunity to work with the patient in the hospital, but in most civilian general hospitals the period of in-patient care is all too short.

2. The psychologist must be well trained for this type of work. Such well trained specialists are few and far between. In fact, too many psychologists are trading on the ability and success of their better trained colleagues and are doing more harm than good.

3. A psychologist, capable of this type of work would command a good salary, which would increase the expenses of already financially overburdened hospitals and patients.

4. The effectiveness of psychometric testing is questionable from the vocational viewpoint. These tests tend to rule-out rather than point-out the individual aptitudes. On the other hand, they can be very helpful in determining the cause of a neurosis.

It is interesting to note the lesson in psychology presented to us today. For several days we have been exposed to reports, papers and discussions on numerous subjects related to physical medicine. For the most part they have been recitations of fact and fancy, illuminated at times by lantern slides. Our invited guest in presenting his paper has inflated our egos by almost apologizing for his intrusion into our august body; expanded our intelligence by explaining only the purely psy-

chological features which might not be completely clear from our educational background; heightened our interest by informing us he would give only a brief report of this extensive paper (and really made it brief).

As premedical students we are taught how to "win friends and influence people" by our exposure to psychology courses. In medical schools psychology is almost universally lacking, not only in the curriculum but all too often in the professors who train us. This is a great loss, since the

emulation of such examples tend to help us to "lose patients and fail to collect bills."

The authors of this paper are to be congratulated on introducing a very important factor into the field of rehabilitation. I am not sure that their suggestions are practical. I am certain that applied psychology is a must in rehabilitation. I wonder if the object might not be better served by training the physiatrist, psychiatrist or internist in psychology as it applies specifically in medicine.

USE OF PAINTING IN REHABILITATION OF TUBERCULOUS PATIENTS*

A. RAY DAWSON, M.D.**

RICHMOND, VA.

Two years ago we initiated a study looking into the relative value of the procedures used in our department of Physical Medicine and Rehabilitation and one of the procedures to come under close scrutiny was that of the use of painting and drawing. Our findings relative to the use of this subject have furnished the material for the present discussion.

We have been using painting as a therapeutic procedure since the Fall of 1946, at which time one of our instructors in Educational Therapy, devoting her primary time to foreign language, but with experience in art instruction, was able to change her schedule in order to meet a demand from the Neuropsychiatric Service to devote two hours a day to instructing psychotic patients in art. This first class was a success, and over a period of one year the demand had increased to such an extent that she was devoting full time to painting instruction. Since that time, painting has shown a steady growth to where, at present, we are making arrangements to expand our utilization of volunteers during the coming Winter.

Painting, like other procedures used in Manual Arts Therapy and Educational Therapy, is difficult to evaluate, since it does not lend itself to any type of solid statistical study, and in the final analysis we are largely dependent upon clinical evaluation. In this connection, an interesting circumstance occurred during the period of our study. A little over a year ago we lost an art instructor by marriage and resignation. This resignation came at a time when the Veterans Administration was going through a reduction-in-force and a general tightening of personnel ceilings. My efforts to save the position of art instructor would, I am sure, have been unsuccessful had it not been for the strong pleas made for the continuation of this service by the Chiefs of Tuberculosis, Neuropsychiatry, and Paraplegia. The efforts on the part of these three Chiefs of Services while pleasing to us, at the same

* Read at the Twenty-Ninth Annual Session of the American Congress of Physical Medicine, Denver, Colorado, September 7, 1951.

** Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

** Chief, Physical Medicine and Rehabilitation Service, McGuire Veterans Administration Hospital and Assistant Professor of Clinical Physical Medicine, Medical College of Virginia, Richmond, Virginia.

time placed upon us a responsibility to study in even more detail the rationale for the use of painting, to search out the pertinent factors which made this a good therapeutic procedure, and to develop these factors to the highest point attainable.

The largest number of patients engaged in painting come from the Neuropsychiatric Service. Painting has become an integral part of the diagnostic and therapeutic armamentarium of the Psychiatrist. The acceptance of painting and the rationale for its use in this field is richly attested to by the volume of literature on this subject that can be found in any medical library.¹⁻¹² However, there seems to be a drought of literature on the use of painting in tuberculosis or other medical conditions. It is, therefore, our purpose to emphasize the use of painting as a therapeutic procedure in the treatment of tuberculosis, with the understanding that much of the rationale for using this subject in tuberculosis can be applied to other medical conditions, especially cardiovascular and gastro-intestinal diseases. Before leaving the subject of the use of art in neuropsychiatric cases, attention should be called to the work done by Dr. Benedict Nagler, Chief of Neuropsychiatry at McGuire Veterans Administration Hospital.¹³⁻¹⁴

Phthisiologists tell us over and over again that the treatment of tuberculosis is built upon a foundation of rest, both physical and emotional, and as we go back to our studies of psychology, we realized that it is impossible to have complete physical rest without emotional rest. In fact, even when the patient is asleep, we have witnessed much physical exertion accompanying an uncomfortable dream. Dr. Roy Myer Simpson, in discussing the emotions and tuberculosis, states as follows: "If they (the emotions) find no outward expression they are likely to backfire into the internal mechanisms of digestion, glandular organs of internal secretion, the sympathetic nervous system, or other vital bodily processes and cause serious organic disturbances — tubercular bacilli thrive on emotional excitement. Excitement churns the tissues of the lung. To control tuberculosis, we must first control our emotions."¹⁵ Thus, if a procedure used in Physical Medicine and Rehabilitation is to be of real value, it must meet the first criterion — REST — and thereby must assist in producing rest. Clinically, we have found that among the patients who become interested in painting as a hobby, it becomes a restful relaxation.

As illustrative of this rest producing factor, the following is quoted from the art therapist's report presented to our Tuberculosis Rehabilitation Conference. Mr. A. O. is a white male in his late fifties which has been an extremely active individual. In the past he has been at various times a school teacher, farmer, and forest ranger. He has suffered from tuberculosis for

1. Bieber, Irving, and Herkimer, Jessie K.: Art in Psychotherapy, *Am. J. Psychiat.* **104**:627 (Apr.) 1948.
2. Curran, F. J.: Art Value in Psychiatric Hospital, *Dis. Nerv. System* **1**:336 (Nov.) 1940.
3. Arlow, J. A., and Kadis, A.: Finger Painting in Psychotherapy of Children, *Am. J. Orthopsychiat.* **10**:134 (Jan.) 1946.
4. Huntton, M.: Creative Arts as Therapy, *Bull. Menninger Clin.* **13**:198 (Nov.) 1949.
5. Rosenzweig, Durbin, and Leonard, Laura A.: Finger Painting as an Investigative Approach to Therapeutic Techniques, *Occupational Therapy and Rehabilitation* **24**:1, 1946.
6. Napoli, P. J.: Finger Painting and Personality Diagnosis, *Genet. Psychol. Monogr.* **34**:129 (Nov.) 1946.
7. Pessin, Joseph, and Friedman, Irwin: The Value of Art in the Treatment of the Mentally Ill, *Occup. Therap. and Rehab.* **29**:1 (Feb.) 1949.
8. Reitman, F.: "Creative Spell" of Schizophrenics After Leukotomy, *J. Ment. Sc.* **93**:56 (Jan.) 1947.
9. Taylor, Prentiss: Art as Psychotherapy, *Am. J. Psychiat.* **106**:596 (Feb.) 1950.
10. Brick, M.: Mental Hygiene Value of Children's Art Work, *Am. J. Orthopsychiat.* **14**:136 (Jan.) 1944.
11. Rank, Otto: Art and Artist, Tudor Publishing Company, New York.
12. Lowenfeld, Viktor: The Nature of Creative Activity, Kegan Paul, Trench, Trubner & Co., Ltd., London.
13. Nagler, Benedict: The Art of the Mentally Ill, *Digest of Neurology and Psychiatry, Series XVIII*, (Feb.) 1950.
14. Nagler, Benedict: Participation in Symposium on "Psychiatric Evaluation of Artistic Expression," American Psychiatric Association, Detroit (May) 1950. To be published.
15. Pattison, H. A.: Rehabilitation of the Tuberculous, The Livingston Press, Livingston, New York.

years and apparently must spend at least two or three years more "on the cure." It was especially difficult to arouse this patient's interest because he had, as so often happens with patients in his age group, developed the attitude that he had come to the hospital to die. The therapist issued the patient sketching materials and played upon his interest in animals and wild life. From shaky sketches done at his bedside, the patient progressed to pen and ink drawing and from these to oil paintings which were copies of other paintings or photographs. The patient has developed such self-confidence that he is now executing fine original paintings. He is enthusiastic about his work and paints regularly. When the patient discovered that he could successfully participate, he widened his sphere of interests until they, at present, include most of the activities offered to tuberculous patients. This drastic change in attitude and outlook on life was brought about mainly by the exploitation of a small glimmer of an interest in art.

Before leaving our first and most important criterion — rest — we do wish to bring to your attention a word of warning. It is our opinion that painting must be used solely as a hobby and not as a vocation, if it is to be successful in bringing about rest. In discussing this point, a well known phthisiologist, gave me a case history from his own experience. A woman portrait painter, who was healing her lesion well, was allowed to continue this work two hours a day. Very soon she started to go downward. Upon discontinuing painting, she reversed the process and again went on to healing. She later went to Switzerland, where she was allowed to paint landscapes and continued her healing process without interruption.

In our own experience, we have in the hospital at this time a tuberculous patient who is a commercial artist, an illustrator for one of the Government departments. When we first enrolled him in our art class, we did so with much anxiety, fearing that he would rapidly revert to his normal vocational work of illustrating. This, however, did not happen and, at present, he is completing a typical painting produced by a tuberculous patient. It is a cool body of water, against a background of rolling hills, shaded by stately pine trees. He has made an increasingly good adjustment to his ward surroundings. He has developed a wonderful sense of humor. His latest cartoon, which we found circulating on the ward a few days ago, was a picture of himself floating in mid air after a pneumoperitoneum injection. Needless to say, he is one of the most popular patients on the ward.

A second criterion which our procedure must meet in the treatment of tuberculosis is that the activity must not be exhausting. In fact, the less energy consumed, the better. Of all the procedures we use, painting meets this criterion best. The average sketch pad weighs 4 ounces, canvas with the stretcher weighs 24 ounces, sketch pencil and painting brush about an ounce each. One can paint or sketch while lying in bed, sitting in a chair, or standing. It is most important, however, that the body be in a relaxed position. Energy consumption is practically nil. We, therefore, see that painting meets our two basic considerations — it does produce rest and it does not consume an appreciable amount of energy. It is not fatiguing. But painting does much more than fill these two criteria. It, (1) catches and holds interest and overcomes boredom, (2) gives pictorial reality to the wish to be out-of-doors, (3) creates wholesome fellowship, and, (4) partially satisfies the creative urge and brings recognition. These criteria will be discussed seriatim.

(1) *Catches and Holds Interest.* — The majority of our patients are from rural areas and from schools that did not have departments of art or art

education, yet about 12 to 15 per cent of our tuberculosis patients are interested in this field of endeavor. Most of our patients have not only lacked education in art or art appreciation but painting to them was thought of as kind of a "sissy" hobby. This is illustrated by an experience that we had in convalescent hospitals during the recent war in connection with classes in music appreciation. Frequently rough "hard boiled" Army personnel attended a class in music appreciation out of curiosity and a desire for an opportunity to do some "griping," only to remain because of sheer enjoyment from the thrill of listening to the universal language of emotional expression. There is apparently much latent talent for the arts which is awaiting an opportunity for expression. Normally, our art instructor sees a patient first when he is strictly confined to bed. The instructor will give the patient a sketch pad and pencil with a few words of instruction. If the patient shows sufficient interest to complete two paintings he has become a confirmed hobbyist; he has learned to see a picture in commonplace things. He has learned that he has the ability to project his mind's eye view on canvas. His interest is solid and remaining.

(2) *Painting Gives Pictorial Reality to the Wish to Be Out From Behind Doors.* — The predominance of quiet open spaces and outdoor life is by far the most outstanding single characteristic found in paintings done by the tuberculous patients. Their painting to a large extent, follow similar patterns — cool water, light colors, rolling background in horizontal panels and with quiet wild life — rest, relaxation and contemplation. A recent survey of the paintings found in our tuberculosis art studio revealed that of the 57 paintings present, 46 were of the above characteristic, 11 were still life and portraits, two being for floral arrangements.

(3) *Painting Creates Wholesome Fellowship.* — As the patients become more interested in art, they find a group of art hobbyists ready to welcome them with open arms to instruct our neophytes in the small techniques that add to better productions. He learns a new and interesting language. He finds that in addition to painting as an outlet his fellow enthusiasts are usually interested in music, books, and the like, all of which add to the enjoyment of life. As our patient reaches the ambulant state, he has available an unofficial group called an art club using the art studio in the tuberculosis building as their headquarters. Artists and art students in the City of Richmond are frequent callers. Once a year the tuberculosis patients put on an art exhibit for one afternoon, which was attended by some 235 visitors from the city and the hospital last Fall. When a patient becomes eligible for club membership, he is given a key to the studio in order that he may have full access to the area. This studio is a very cozy room off to itself and having a reasonable amount of suitable furniture. There is an automatic phonograph and an excellent collection of fine phonograph records, plus an art library. Many of our case histories show that patients who did not adjust to the hospital prior to taking up painting have adjusted well since engaging in this activity.

The feeling of clubbiness and mutual interest which becomes characteristic of the patient who enters into art activity has some disadvantages. At times these patients have been called "snooty," but the advantages outweigh these complaints, for these patients are interested in each other. They feel that as a group, they have the responsibility for each others adjustments to the hospital.

(4) *Painting Partially Satisfies the Creative Urge and Brings Recognition.* — To analyze elements that are manifested by the creative urge would ex-

ceed the limits of this paper. Life by its very nature is reproductive and expansive. Individuals live by recognition of these two basic phenomena. Any chronic, prolonged, debilitating disease not only stifles this urge but at times erases the process of expansion. Man's expansion in business and community life is, of course, usually cut off by prolonged hospitalization. Recognition by the community becomes practically non-existent. These things — CREATION and RECOGNITION — are vital forces in our life. A few days ago a group of us were walking through the tuberculosis building when one of the patients, who in the past was of the problem case type, came up to us without a word of complaint and proudly showed us a picture of our outdoor swimming pool and bathhouse. The picture was not particularly good but as he caressed the frame his facial expression told us more about the picture than his words. He was the proud creator, who deserved and received recognition from us.

Summary

Painting, like music, is one of the universal languages — expressing a desire to create, place in order and bring about rhythm. It is used by man to pass on to his contemporaries and descendants a noble idea which may be used as a foundation upon which to build. Somewhere in the treatment of tuberculosis our patients learn to recognize their physical limitations, and perhaps the enforced rest stimulates appreciation of the arts. Quietness does not dull the senses but it affords an opportunity to withdraw from the superficiality of the world. It has been our experience that many of our patients who were unaware of the fact that they possessed talent for painting have turned out pictures of high quality that can be viewed with a feeling of restful quietness and faith in the future.

Discussion

Dr. Florence I. Mahoney (Memphis, Tenn.): Dr. Dawson's paper is an interesting discussion of one of the phases of rehabilitation which has proved to be an excellent treatment medium for several kinds of patients. He has been fortunate to procure and be able to hold and pay for a full time Art Instructor. Many of us are not so fortunate. Instead we must be satisfied with an Occupational Therapist or Manual Arts or Educational Therapist who knows some art and who does this as part of his or her work.

In our hospital, art is used therapeutically in Occupational Therapy. We have no one who is primarily an artist, but several Occupational Therapists who know enough about painting, ceramics, and other art forms to use it in the treatment of patients. We also have a Volunteer paraplegic woman who was formerly an art teacher who gives one day a week to the patients, when she is able to get to the hospital. Her enthusiasm and knowledge of teaching art have interested a number of patients in this form of expression.

We have also found painting a useful form of treatment for the TB patients. Frequently they start with stenciling, which is a small project, easily set up for a 20-30 minute treatment when the patient is in Group II or III, working in bed. With this form of art a patient may learn shading, how to mix paint, and something

about design. Then he may paint ceramic tiles, which brings in some free hand work and imagination on the part of the patient. The third step is to try charcoal or pencil sketches and then pastel sketches, using colored chalk. These are satisfying, fairly easy to do, and a means of learning shading in a fairly easy manner. By this time the therapist knows whether or not the patient has any talent for art, and whether he is really interested in going into it more deeply. He then is started on water colors and oils.

Our Occupational Therapists have found the use of plaster molds very effective for teaching perspective on the ward art program. They have made a square, a ball, a cone and a cylinder. These can be arranged in a group, in different patterns, or used individually. They are a part of the ward art equipment, and can be set on a table on the ward or in a window sill. The patient sketches in charcoal or pencil. They are easily adaptable to the short periods used in the early phases of tuberculosis. We also use the portable easels on the ward so that the patient can sketch while still a bed patient, and yet be comfortable and use little effort in this work.

For the patient who has little talent for drawing but who still wishes to attempt some painting, we have found the Picture Craft Kits put out by the Picture Craft Company in Decatur, Illinois, very helpful.

The patient gets a great deal of satisfaction out of painting a picture, and it is difficult to fail with this method. Each part of the picture is numbered, and the colors for each number and a paint brush come with the kit. Outdoor scenes, still life, animals, etc., may be procured for painting in these kits. This type of painting often stimulates an interest in learning to draw and paint in a patient who has had no experience in this sort of thing before.

More patients who participate in painting and drawing use this form of art as a hobby or follow it up as a vocation after their hospitalization than any other form of Occupational Therapy.

We have also used art as a form of functional therapy and have had two quadriplegic patients learn they had a talent in art after their injuries, and one of them is going to art school full time. These boys worked in Occupational Therapy to learn all possible use of the upper extremities. Usually they begin with stenciling, and possibly do some copper tooling to learn the motions they will need in feeding, or any movements they can develop and may wish to use to be more independent. A few have become interested in painting and have tried using a brush attached to a hand appliance. He uses this appliance for his art work. This patient is having some hand surgery done this summer with the hopes of getting some function in this right hand.

Our experience with using art for a professional artist has been the same as that of Dr. Dawson. Since they already know a great deal about art, it is not the means of relaxation and the stimulus to a hobby development that it is to one who has not had the opportunity to work in art previously.

Dr. Dawson is to be congratulated for developing an art program for tuberculosis patients which reaches as many patients as he states. He is also fortunate in having

a full time art teacher to carry on this work. I feel sure that one of the reasons it has worked so well is that a full time therapist who knows art and the therapeutic approach in teaching it, and has a great deal of enthusiasm for her job, is in charge of the program. However, those of us who are not so fortunate should be stimulated by this paper to develop a better art program for our long-term patients.

Dr. A. Ray Dawson (Richmond, Virginia): There are two things I want to answer. First, our "female therapist" is a great big he-man, a World War II veteran, who teaches art now.

Secondly, we use art extensively for paraplegics. We have a number of paraplegics who are now making their living at it. I started to put into my paper a comparison of the art of a paraplegic and that of a tuberculous patient. It is extremely interesting. The paraplegic paints nothing but rigid pictures. Usually they are copies. I don't know why that is so. The sketch pad of the paraplegic will contain sketches of the human figure, and things of that nature, but when he starts painting the picture becomes rigid. It is a copy.

I think somewhere we are dealing with this business of body image. I would like to learn more about it. I am going to make a study of it this coming year. I don't know what we are dealing with in relation to the art of the paraplegic, but it is an extremely interesting thing.

As to whether I would sacrifice an occupational therapist for an art instructor, the answer is, yes. That is one of the reasons for this paper. I think we are overlooking the use of art. I believe we can reach a lot of patients we are not reaching now. I would not sacrifice the only occupational therapist that I have, of course; but as I have some fourteen, I would sacrifice one for an art instructor if I had to do so.



ISCHEMIC NECROSIS OF THE ANTERIOR TIBIAL MUSCLE *

Report of a Case *

RAOUL C. PSAKI, LT. COL., MC, U. S. ARMY

Physical Medicine Service
Walter Reed Army Hospital
and

CHARLES D. SCHIELDS, LT. COL., MC, U. S. ARMY

Physical Medicine Service
Walter Reed Army Hospital

Necrosis of a muscle or group of muscles can be anticipated following adequate trauma that obliterates the blood supply. The anterior tibial muscle seems to be particularly vulnerable to ischemic necrosis from mild and indirect trauma. Tillotson and Coventry¹ have recently reported a case of spontaneous ischemic necrosis of the anterior tibial muscle. They credit Vogt² with first reporting this condition in 1943. Horn³ reports two cases of ischemia of the anterior tibial muscle in soldiers, following long marches. Other cases have been reported following varying degrees of trauma or stress.

Tillotson and Coventry¹ state the typical findings in spontaneous ischemic necrosis of the anterior tibial muscle are: "(1) pain, localized about the ankle and in the anterior muscular compartment of the leg, the onset of which occurs during physical activity; (2) swelling of the leg, especially over the anterior tibial compartment; (3) glossy skin over the affected area, and (4) paralysis of dorsiflexion, and at times temporary paralysis of the peroneal nerve."

Case History

A male soldier stepped from a train in Japan on December 14, 1949, and twisted his left ankle. There was some slight pain at the time, which grew progressively worse. Patient reported to his local dispensary on December 16, 1949. The ankle was wrapped with an ace bandage and he was placed on a quarters status. The pain in the ankle continued and swelling and tenderness developed in the anterolateral aspect of the lower half of the left leg. He was admitted to a station hospital on December 21, 1949, and was treated with penicillin, sulfadiazine and elevation of the left lower extremity. Patient developed a left foot drop and on December 30, 1949, a posterior plaster splint was applied. He was evacuated to an Army hospital in the United States, where he arrived on February 25, 1950.

At the time of admission to the Neurosurgical Section of the hospital the patient had no complaints other than the drop foot. Routine blood and urine studies were within normal limits. X-ray of the left leg revealed no bony or soft tissue abnormality. The left ankle was slightly swollen and there was marked induration over the left anterior tibial muscle. There was hypohesia over the lower third of the anterior and lateral leg and the web between the first and second toes, left foot. The patient was provided with

* Walter Reed Army Hospital, Physical Medicine Service.

1. Tillotson, J. F.; Coventry, M. B.: Spontaneous Ischemic Necrosis of the Anterior Tibial Muscle: Report of a Case. *Proceedings of the Staff Meetings of the Mayo Clinic* 25:223 (April 26) 1950.

2. Vogt, P. R.; Quoted by Horn, C. E., Page 622.

3. Horn, C. E.: Acute Ischemia of the Anterior Tibial Muscle and the Long Extensor Muscle of the Toes, *J. Bone & Joint Surg.* 37:615 (Oct.) 1945.

a drop foot brace and treated by the Physical Medicine Service to prevent contractures.

On September 13, 1950, an electromyogram was done, using the intramuscular needle electrode technique.⁴ Moderate fibrosis was found throughout the left anterior tibial muscle. This was most marked in the central portion as evidenced by resistance to the passage of the needle electrode during the exploration of the muscle. Absence of function in this region was revealed by electrical silence both at rest and on attempt at voluntary motion. Moderate fibrosis was present along the upper medial portion of the extensor digitorum longus. No needle resistance was found in the other portions of the long toe extensor or in the peroneus longus. Low voltage motor units, complex voltages and fibrillation potentials were present in scattered areas of the left anterior tibial muscle above and below the hard, tough central portion of the muscle. Continuous active fibrillation of denervation and normal motor units were found in all areas of the extensor digitorum longus and peroneus longus.

At this time a voluntary muscle test revealed the following strengths based on percentages of 100.*

- Left tibialis anterior—10
- Left extensor digitorum longus—85
- Left extensor digitorum brevis—85
- Left extensor hallucis longus—75
- Left peroneus longus—90
- Left peroneus brevis—90

The patient was receiving hydrotherapy in the form of whirlpool baths for the left lower extremity; electrotherapy (electrical stimulation) of involved muscles; active assistive to active exercise to mobilize the ankle and foot joints; and progressive resistive exercise to produce hypertrophy of the remaining muscle fibers.

In spite of continuous, vigorous therapy, throughout October, 1950, he failed to show any further functional improvement. If a sufficient increase in circulation could be established at the margins of the fibrosed muscles where ischemia may jeopardize the function of viable muscle elements, further improvement could be expected. Therefore, on November 8, 1950, a left lumbar sympathectomy was performed.

The physical medicine regime was then reinstituted ten days following this procedure and a marked softening in the region of the tough, fibrotic tissue ensued. Motor function continued to improve for the next six weeks, when he was returned to duty with 50 per cent strength of the anterior tibial muscle, 85 per cent of the extensor hallucis longus and 100 per cent of the peroneus longus and brevis. The toe extensors remained at 85 per cent.

Discussion

Weddell⁵ is of the opinion that the fibrosed muscle is quite hard to penetrate with the needle and offers a "gritty" resistance to its passage. It is electrically silent in hard, fibrotic areas with fibrillation potentials in the lesser involved regions of the muscle.

4. Huddleston, O. L., et al.: The Use of Electromyography in the Diagnosis of Neuromuscular Disorders. *Arch. Phys. Med.* 31:378 (June) 1950.

*Key to Muscle Evaluation:

100% complete range of motion against gravity with full resistance.

75% complete range of motion against gravity with some resistance.

50% complete range of motion against gravity.

25% complete range of motion with gravity eliminated.

10% evidence of slight contractility with no joint movement.

0 no evidence of contractility.

5. Weddell, G., et al.: The Electrical Activity of Voluntary Muscle in Man Under Normal and Pathological Conditions. *Brain, A Journal of Neurology*, Vol. 67, Part IV, 190, 1944.

The intense fibrosis of the central portion of the left anterior tibial muscle was revealed by extreme resistance to the insertion of the needle electrode and electrical silence in this region.

This case of regional anterior tibial necrosis is secondary to a minor injury with pain and swelling over the central portion of the antero-lateral aspect of the left leg, drop foot and some functioning of the muscle above and below a band of hard, tough muscle tissue. Since only this central band of muscle was not functioning either voluntarily or electro-myographically, the lesion would seem to be due to a vascular deficit rather than primary nerve injury, which one would expect to involve the entire muscle distal to such a lesion.

Mechanism of Vascular Damage. — The mechanism of the vascular insult producing the acute ischemia is not agreed upon. Hughes⁶ has studied the vascular pattern of the anterior tibial muscles, on cadavers. He says, "The critical level of obstruction of blood flow which causes necrosis is not known, but it would seem that a localized complete occlusion of the anterior tibial artery is unlikely to cause necrosis; on the other hand, a longer segmental occlusion of the vessel, such as may be produced by arterial spasm, would obliterate the main channel by which retrograde distribution through the segmental branches may be brought about. In the light of present knowledge it seems that the most likely primary cause of spontaneous ischemia is spasm of a large segment of the anterior tibial artery, beginning just below its anterior tibial recurrent branch."

Hughes⁶ discusses surgical exploration and therapy when a case is seen within the first twelve hours. He also points out that necrotic tissues are prone to infection and gangrene and that there is a definite danger in exploration after the onset of necrosis.

Conclusion

It is felt that in the study of this patient evidence of ischemic necrosis of the muscle rather than any primary nerve involvement was obtained from the history, physical signs, clinical course, electromyographic studies and response to sympathectomy. The functional improvement following sympathectomy was due to the increased blood supply and hypertrophy of the viable muscle tissue present.

Summary

1. A case of anterior tibial muscle necrosis with partial common peroneal nerve involvement is reported.
2. Attention is invited to the danger of surgical intervention after necrosis is established.
3. The value of electromyographic studies in the diagnosis of a case of acute muscle ischemia is presented.

⁶ Hughes, J. R.: Ischemic Necrosis of the Anterior Tibial Muscles Due to Fatigue, J. Bone & Joint Surg. N. S. 30:581 (Nov.) 1948.



ADAPTED WHEELCHAIR FOR ABOVE-KNEE AMPUTEES *

(A Preliminary Report)

CARL M. AKWA, M.D.

RAY PIASKOSKI, M.D.

EDWIN C. WELSH, M.D.

and

LESLIE M. ROOT, CORRECTIVE THERAPIST

WOOD, WISCONSIN *

Flexion contractures in the hips of above-knee amputees have been one of the major problems confronting orthopedists, brace makers, and, more recently, physiatrists. Correct fitting for above-knee prostheses requires free hip motion. The fitting of such prostheses has been impossible in many cases because of hip flexion contractures. Flexion contractures often result from continuous use of the conventional wheelchair. To prevent such hip contractures, a simple wheelchair attachment, interchangeable for right or left amputees, has been devised. This attachment may also be useful for the correction of contractures already developed. This device can be attached easily to any conventional collapsible wheelchair. It can be removed to reconvert the chair for normal use.



Fig. 1.

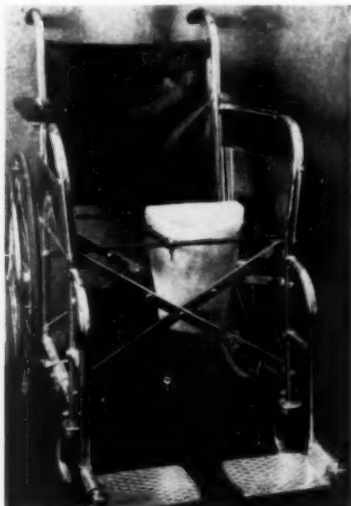


Fig. 2.

* Published with the permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the authors.

* Submitted by the Physical Medicine Rehabilitation Service, Veterans Administration Center, Wood, Wisconsin. Technical assistance was given by Henry V. Grabowski, Manual Arts Therapist, Veterans Administration Center, Wood, Wisconsin.

Description: The socket is the large size from a conventional above-knee prosthesis. An insert can be added to the socket to conform to the size of any stump. The bucket adjustment consists of two aluminum brackets fastened to the wooden socket. Two wing nuts control the maximum and mini-

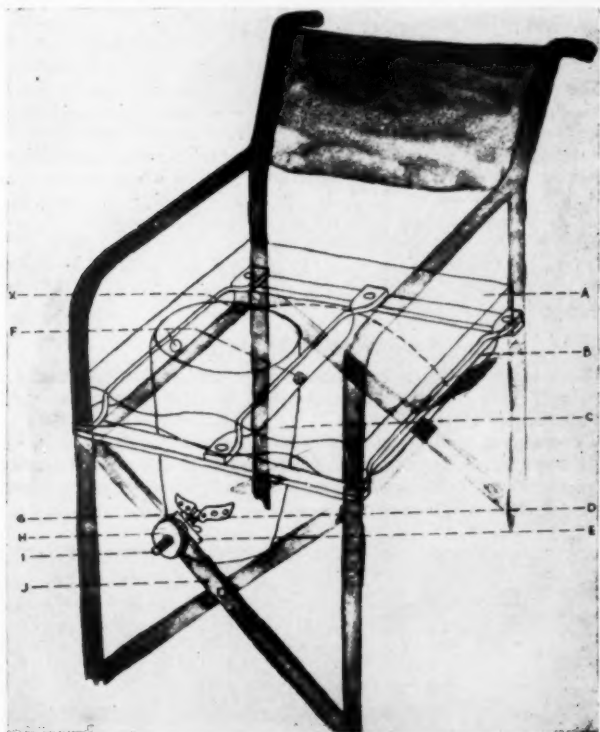


Fig. 3.

Key to Fig. III

- A) Twin face saddle seat
- B) Socket suspension frame
- C) Wooden socket
- D) Bracket for adjustment rod
- E) Fortification block
- F) Carriage bolts
- G) Inside wing nut for adjustment rod
- H) Disk with knurled edge
- I) Adjustment rod
- J) Hollow cross bar
- X) Tubular seat support of wheelchair and a large socket from conventional knee prosthesis

mum adjustment of the socket on the threaded rod. The rod passes through a $\frac{3}{8}$ inch hole in the wheelchair cross brace, both front and back. Since the cross brace is of hollow construction, the hole is fortified with a block. $\frac{1}{4} \times 1 \times 1\frac{1}{2}$ inches, of cold roll steel. When the wing nuts are removed from the adjustment rod, the frame with the socket can be reversed on the wheelchair from right to left positions.

A special twin-face saddle seat, $23\frac{1}{4} \times 17 \times 18$ inches, lined with sponge rubber and covered with imitation leather, is placed over the entire attachment. The hole in the seat is large enough to allow for $\frac{1}{4}$ inch clearance around the bucket. A padded back is used to maintain proper position.

This adjusted chair has been a valuable adjunct to our Physical Medicine Rehabilitation program for above-knee amputees in preventing and correcting flexion contractures of the hips. Contractures of 10 to 30 degrees have been corrected through the use of the chair. It was possible to get patients out of bed earlier. Some of these patients would have been required ordinarily to remain in bed for long periods while traction was being applied by conventional means. Patients were placed in the chair for periods varying from thirty minutes to five hours per day. Of the five patients treated to date, all have been approved by the physiatrist for fitting.

Conclusion and Summary

1. An attachment for a wheelchair to be used in the prevention and correction of flexion contractures of the hips in above-knee amputees has been devised and is described herein.
2. Contractures of 10 to 30 degrees have been corrected.
3. In cases handled to date this adjusted wheelchair has been a valuable adjunct to the Physical Medicine Rehabilitation Service, Veterans Administration Center, Wood, Wisconsin.

30th Annual Session

SCIENTIFIC EXHIBIT SPACE

Requests for applications for scientific exhibit space in connection with the 30th Annual Session to be held at The Roosevelt, New York, New York, August 25, 26, 27, 28, 29, 1952, are being received. Address all communications to the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2.

A DEVICE TO FACILITATE STANDING FROM A SITTING POSITION: FOR PATIENTS WITH SEVERE RESIDUALS OF POLIOMYELITIS *

LESLIE BLAU, M.D.†

JOSEPH PHILLIPS, B.P.E.†

and

DONALD L. ROSE, M.D.‡

For the many patients with severe muscular weaknesses as a result of an attack of poliomyelitis of the paralytic, spinal-type, simple activities of daily living are often impossible to attain except in the sense of their accomplishment as a technical feat. The device to be described has proved to be extremely useful in such a patient who could not stand from a sitting position without its help.

The Device

The device is composed of three main sections as shown in figures 1 and 2:

1. Adjustable horizontal bars.
2. Parallel bars.
3. A seat that fits between the parallel bars.

In using the appliance the patient moves his wheelchair up to the parallel bars and sets its brakes. He locks the right brace in extension at the knee

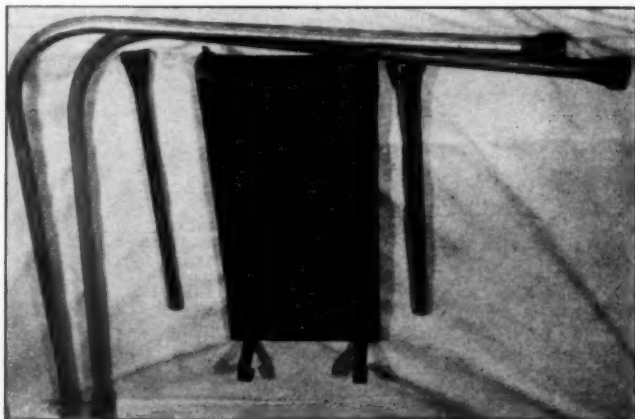


Figure 1. — Layout of units prior to assembly showing the parallel bars with the $\frac{3}{4}$ inch and 1 inch T's and $\frac{1}{4}$ inch studs, assembled. Seat with $\frac{1}{4}$ inch wing bolts in place.

* Published with permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or the conclusions drawn by the authors.

† Physical Medicine Rehabilitation Service, Veterans Administration Center, Wadsworth, Kansas.

‡ University of Kansas Medical Center, Kansas City, Kansas.

and flexes the left leg to 90 degrees. The right forearm is placed in pronation on the seat, the hand grasping its forward edge. The left hand is placed on the arm rest of the wheelchair, the forearm flexed to 90 degrees, the shoulder extended and the scapula depressed and adducted. Figure 3 illustrates this position.



Figure 2. — Appliance assembled in doorway, ready for use.



Figure 3. — Patient is in ready position. Wheelchair brakes are set.

By the simultaneous and coordinated use of the shoulder girdle muscles and forearm extensors on the left and the finger, forearm and arm flexors on the right, the patient, by levering forward from the seat, assumes a position of resting his trunk on the device seat as shown in figure 4. He then releases



Figure 4. — Patient is preparing to rise from trunk resting position.

his hold on the seat, transferring his hands first to the horizontal bar and then to the parallel bars.

By coordinate action of the triceps, erector spinae and shoulder girdles



Figure 5. — Patient is in the erect position.



Figure 6. — Patient is ready for ambulation.

to extend the torso, he is able to assume the erect position as shown in figure 5. The patient may now turn, push his wheelchair away with his crutch and is ready to walk. See figure 6 for this position.

Material and Fabrication

ADJUSTABLE HORIZONTAL BAR —

- Materials needed:**
- 1 piece $\frac{3}{4}$ in. standard black pipe, 24 in. long
 - 1 piece 1 in. thinwall conduit, 25 in. long
 - 1 $\frac{3}{4}$ in. nut of cold rolled steel
 - 1 $\frac{3}{4}$ in. bolt of cold rolled steel, 20 in. long
 - 1 piece $\frac{3}{4}$ in. cold rolled steel, 3 in. long
 - 2 crutch tips, suction type, No. 18

Fabrication: The $\frac{3}{4}$ in. nut is welded into the inside of the $\frac{3}{4}$ in. pipe, flush with the open end. The opposite end of the pipe is fitted with a crutch tip. The bolt is welded into the inside of the conduit, one inch from the end. This allows four inches for inserting the piece of $\frac{3}{4}$ in. cold rolled steel, 3 in. long. This piece of steel is fitted with a crutch tip and its free movement in the conduit permits tightening the bar when the crutch tips are in contact with the door jamb.

PARALLEL BARS —

- Materials needed:**
- 2 pieces of 1 in. thinwall conduit, 7 ft. long
 - 1 T pipe fitting, 1 in. x 1 in. x $\frac{3}{4}$ in.
 - 1 $\frac{3}{4}$ in. standard T pipe fitting
 - 2 $\frac{3}{4}$ in. pipe nipples, 2 in. long, threaded on one end
 - 2 wooden plugs, $\frac{3}{4}$ in. x 2 in. long
 - 2 crutch tips, suction type, No. 18
 - 2 $\frac{3}{4}$ in. wing studs, 2 in. long

Fabrication: The $\frac{3}{4}$ in. pipe nipples are threaded into the stem ends of the T's and the unthreaded ends are inserted into the ends of the thinwall conduit parallel bars. A rivet is used at this juncture to secure the nipple to the conduit. The threads on the bodies of the T's are removed to allow a smooth sliding action on the horizontal bar. The bodies of the T's are tapped for a $\frac{1}{4}$ in. wing stud, 2 in. long to serve as a set to keep the parallel bars from sliding on the horizontal bar, and to hold the horizontal bar ajar in the door jamb. The two pieces of conduit, 7 ft. long, are bent to conform to the height of the patient. The wooden plugs are inserted into the ends of the conduit next to the floor and crutch tips are fitted to these to prevent slipping and damaging the floor.

SEAT —

- Materials needed:**
- 1 piece $\frac{3}{4}$ in. plywood, 2 ft. long and 1 ft. wide
 - 4 hanger irons, $\frac{1}{8}$ in. flat steel, 12 in. long x 1 in. wide, bent on one end to conform to the shape of the conduit parallel bars
 - 8 3/16 in. wood screws, $\frac{3}{4}$ in. long
 - 4 wing bolts with nuts, $\frac{3}{4}$ in. x 2 in.

Scrap Duran or Vinyl for upholstery

Fabrication: Two $\frac{3}{16}$ in. holes are drilled in each of the four hanger irons and mounted to the plywood with $\frac{3}{16}$ in. screws, $\frac{1}{4}$ in. long. The U section of the hangers are drilled for wing bolts $\frac{1}{2}$ in. x 2 in. long. Tightening the wing bolts secures the seat to the proper position on the parallel bars. Scrap Duran or Vinyl is tacked to the plywood for upholstery.

ASSEMBLY—

The device is assembled in the doorway by sliding the T's of parallel bars over the corresponding horizontal bars. The bolt of one-half of horizontal bar is turned into the nut of the other half until the bar becomes short enough to insert the crutch tips into the door jamb. A reverse turning then brings the bar ajar with the jamb. The wing studs on the bodies of the T's are then tightened to make the parallel bars firm and keep the horizontal bar from loosening. The seat is set on the parallel bars and the wing bolts are tightened.

All details of this assembly could be easily accomplished by the patient.

Summary

An adapted device has been described which enabled a patient with severe muscular weaknesses, the residual of poliomyelitis, to assume the erect position independently without additional aid.

The authors are grateful to Mr. William W. Russell, Executive Assistant, Physical Medicine Rehabilitation Service, for his contribution by providing us with the photographs and to Mr. Andrew Cates, Chief Orthotist at Wadsworth Veterans Administration Center, for the fabrication of the device. We are also thankful to Mrs. Virginia Cummins for her untiring cooperation in the preparation of the manuscript.

IMPORTANT NOTICE

Nominations of candidates for Gold Key Awards may be made by any member of the Congress. A nomination should include a brief statement of the achievements of the candidate and the reasons for his consideration by the committee appointed to select the recipients of the award. Nominations should be sent to the Executive Secretary of the American Congress of Physical Medicine by May 1, 1952.

ARCHIVES of PHYSICAL MEDICINE

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

∴ EDITORIAL ∴

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION

The next examinations for the American Board of Physical Medicine and Rehabilitation will be held in Chicago, June 8 and 9, 1952. The final date for filing applications is March 31, 1952. Applications for eligibility to the examinations should be mailed to the Secretary, Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Georgia.

DIATHERMY RULES AND THE PHYSICIAN

A large number of physicians using short-wave diathermy equipment manufactured prior to July 1, 1947, are confronted with the decision as to what to do after June 30, 1952, when new rules and regulations of the Federal Communications Commission relating to medical service become effective. For several years the physicians and manufacturers of diathermy equipment were defending their rights to manufacture, sell and use such equipment in treating human ills, and the radio communications services were protesting the interference caused by its use with resulting interruption of radio communications and occasional jeopardy to life. The FCC, with the cooperation of the different groups concerned, was able to work out a solution to this vexing problem. Under certain conditions operation of existing diathermy equipment was possible for five years. This period has now nearly elapsed. A physician whose equipment does not now operate at one of the prescribed frequencies, 13,560, 27,120 or 40,680 kilocycles (within prescribed limits), must make his decision as to operation after June 30, 1952, from the following possibilities:

1. He may discard his old machine and purchase one meeting the new regulations.
2. He may have his treating room shielded and continue use of his old machine if it is of a suitable type. Otherwise the machine must be rebuilt, for use in a shielded room.
3. He may have his machine rebuilt to comply with the new requirements.
4. He may discontinue giving diathermy treatment.

These possibilities are discussed in order:

(1) A simple solution entails the expenditure of several hundred dollars in the procurement of a diathermy generator which has had type approval by the FCC. The Council on Physical Medicine and Rehabilitation of the American Medical Association maintains a list of accepted manufacturers and models of diathermy generators found to give adequate heating for clinical use. The prospective purchaser thus has two organizations with which he can check the merits of a given machine before investing. It is usually possible to purchase a new machine of the same make as previously used, so that changes in techniques of operation will not be great. This feature is important from the standpoint of dosage and the securing of desired clinical results.

(2) There may be some physicians who prefer to continue using their old equipment. In such a case, if the machine is provided with a rectified

and filtered power supply and power line filters, the treatment room must be shielded. This is an expensive and somewhat time-consuming operation. There are two methods which may be used: (a), covering the walls, floor and ceiling with a thin metallic sheet to form a continuous metal surface; (b), construction of a screen wire or metal cubicle within the treating room to contain the diathermy generator, patient treating table, and other accessories. In either case the technical details require the services of a consulting radio engineer and application by service men trained in installation of such devices. Screened rooms and special power line filters are on the market which can readily be assembled in a desired location. Such facilities, however, in their present unappealing style seem inappropriate for a physician's office. Nevertheless, this appears to be the only manner in which diathermy generators can legally operate at other than assigned frequencies. After installation of a shielded room, and every three years thereafter, its effectiveness must be certified by a competent engineer. The cost of the installation and certification of a shielded room may be several times that of a new generator. It is, therefore, unlikely that there will be many calls for this type of service.

(3) The physician may perhaps be justified in thinking that his machine can be rebuilt without too great expense, in order to comply with the new requirements. This would not be economically feasible unless a large number of machines were involved. It is unlikely that the individual physician would save much money by such an arrangement, even if it should be possible.

(4) The physician may elect to discontinue the use of diathermy because of the extra expense involved in meeting the requirements of the law. This may be the decision of a limited number of physicians who have not made much application of this form of therapy. The situation applies also to hospitals and rehabilitation centers. These institutions usually operate on a limited budget, such that when operation of present diathermy equipment becomes illegal, they will be forced to suspend these curative methods until new equipment can be purchased. There are instances where a diathermy generator has been presented as a memorial gift, but unfortunately these must also be discarded.

From the foregoing discussion it is apparent that the most economical procedure for the physician using diathermy equipment is to obtain apparatus which has had type approval by the Federal Communications Commission.

E. L. HALL, E.E.,
National Bureau of Standards,
Washington, D. C.

INDICATIONS FOR DIATHERMY

The preceding editorial by E. E. Hall calls attention to the fast approaching deadline when most of the diathermy equipment now in use will have to be replaced, rebuilt, or shielded. Some of us have procrastinated and have done little or nothing toward procuring approved equipment. Perhaps some might even prefer to accept Hall's fourth alternative and discontinue the use of this modality altogether. It might be well to review briefly the therapeutic indications for diathermy to ascertain how essential it is in the armamentarium of physical medicine.

About two years ago, Martin and Erickson¹ in an article written for the Council on Physical Medicine and Rehabilitation enumerated the following indica-

1. Martin, G. M., and Erickson, D. J.: *Medical Diathermy*, J. A. M. A. 142:27 (Jan. 7) 1950.

tions for diathermy with some qualifications: (1) rheumatoid arthritis, (2) osteoarthritis, (3) bursitis, (4) tenosynovitis, (5) fibrositis and myositis, (6) sprains and strains, (7) fractures, (8) neuritis, (9) peripheral vascular disease, (10) sinusitis, (11) otitis media, (12) pleurisy, (13) diverticulitis, (14) iritis and uveitis.

The value of diathermy in rheumatoid arthritis is limited by the fact that the disease usually is polyarticular and the treatment of many joints is too time consuming and too fatiguing for the patient. Furthermore, other forms of heat give as good or better results. In osteoarthritis, however, it is the best form of heat available and often gives lasting symptomatic relief. In view of the high incidence of this disease in older patients, the therapeutic importance of diathermy is greatly enhanced.

The writer has found that diathermy usually accentuates pain in acute bursitis and prefers the ice pack in the treatment of this condition.³ In chronic bursitis it produces satisfactory results if treatment is persistently pursued. In the writer's experience diathermy is more effective treatment for tenosynovitis than other forms of heat. Moist heat gives better muscular relaxation than diathermy in fibrositis and myositis and is better preparation for massage in these conditions. It is a satisfactory form of heat in sprains after all danger of hemorrhage into local tissue is past; certainly not earlier than twenty-four hours after the injury. The use of diathermy in the treatment of fractures is somewhat controversial and other forms of heat are probably to be preferred.

Diathermy is likely to accentuate pain in neuritis, but is of considerable value in the radicular type of peripheral nerve pain, such as certain cases of sciatica and intercostal neuralgia. Diathermy should not be used locally in peripheral vascular disease of the lower extremities, but may be applied to the upper thigh or lower trunk to produce reflex dilatation of vessels in the limbs.

Diathermy is of value in giving symptomatic relief in acutely congested sinuses associated with the common cold provided adequate drainage is obtained by means of a local vasoconstrictor. In chronic sinusitis, its value is limited. Short-wave diathermy may be used for pain relief in otitis media in conjunction with other indicated therapy.

In subacute and chronic pelvic inflammatory disease, diathermy is an important method of treatment. Short-wave diathermy may be effectively applied by means of the pancake coil. It is exceedingly effective treatment for the relief of pleural pain, but should not be used if the pleurisy is of tuberculous origin. It has been reported to be of benefit in the treatment of diverticulitis in conjunction with other therapeutic procedures.

Diathermy may be used in the treatment of iritis and uveitis, if applied with caution. Experimental overheating of the lens has produced opacities.^{3,4}

There are certain contraindications to diathermy which space will not permit us to consider. The indications mentioned in the preceding paragraphs show that diathermy is an important method of heat therapy. It is, however, primarily an office or treatment room procedure which can be utilized only occasionally in the patient's home. Nevertheless, the physician who has had diathermy equipment available and is familiar with its use, would find it difficult to do without it.

2. Moor, F. B.: The Treatment of Acute Subdeltoid Bursitis, *Med. Arts and Sciences* 4:66, 1950.

3. Richardson, W. A.; Duane, T. D., and Hines, H. M.: Experimental Lenticular Opacities Produced by Microwave Irradiations, *Arch. Phys. Med.* 29:766 (Dec.) 1948.

4. Daily, L., Jr.; Wakim, K. G.; Herrick, J. T., and Packhill, E. M.: Effects of Microwave Diathermy on the Eye (Abstr.), *Am. J. Physiol.* 135:432 (Dec.) 1948.

MEDICAL NEWS

Members are invited to send to this office items of news of general interest, for example, those relating to society activities, new hospitals, education, etc. Programs should be received at least three weeks before the date of meeting.

Personals

Dr. **George D. Wilson** has been elected the new Praetor of Southeastern Province of the Phi Beta Pi Medical Fraternity, including the states of Kentucky, Tennessee, North and South Carolina, Georgia, Alabama, Mississippi and Florida. Dr. Wilson delivered lectures on recent developments and treatments by Physical Medicine to faculty and students at the University of Alabama Medical School, Birmingham, Ala. He delivered an essay on "Post Injection Paralysis" to the Section of Physical Medicine Rehabilitation of the Southern Medical Association held at Dallas, Texas.

Dr. **George Morris Piersol** is Editor-in-Chief of the only complete medical and surgical reference library in one single unit, **THE CYCLOPEDIA OF MEDICINE, SURGERY, SPECIALTIES**.

Dr. **Michael M. Dacso**, Goldwater Memorial Hospital, New York, N. Y., recently appeared before the New York Joint Legislative Committee on "Problems of the Rehabilitation of the Aged."

The February meeting of the Pennsylvania Academy of Physical Medicine and Rehabilitation was held at the Philadelphia County Medical Society. The following topics were presented: "Recent Trends in Industrial Medicine," by Dr. Philo W. Rugh and "Problems in Rehabilitation of the Aphasic Hemiplegic," by Dr. **Samuel Sverdluk**.

New Journal

Dr. **Harry D. Bouman** of the University of Wisconsin Medical School is editor of a new professional publication, "American Journal of Physical Medicine."

Dr. Bouman came to the University in 1947, after two years on the Northwestern faculty. He also has taught at Oberlin college, Ohio, and the University of Rochester, N. Y. A native of Holland, he received his medical degree from the University of Amsterdam.

Bill H. 1059 Introduced

Massachusetts — Bill amends law relating to physical therapy — proposes to permit the licensing of persons without examination if they were engaged in the active practice of physical therapy in a competent manner for three (3) years immediately preceding November 30, 1951.

Accepted Devices

Beck-Lee Cardi-All Electrocardiograph. — Manufactured by Beck-Lee Corporation, 630 W. Jackson Blvd., Chicago 6, Ill., device is a direct-writing instrument in which an electrically heated stylus traces on heat-sensitive paper strip. The Council on Physical Medicine and Rehabilitation voted to include the instrument in its accepted list.

Mineralight, Model SL 3660. — Manufactured by Ultra-Violet Products, Inc., 145 Pasadena Ave., South Pasadena, California, lamp is a small source of ultraviolet radiation useful for examination of small specimens of material, but especially designed for use in medical diagnosis. The Council on Physical Medicine and Rehabilitation voted to include the device in its accepted list.

Kinocycle. — Manufactured by Kinocycle Company, 99 Prospect Hill Ave., Summit, N. J., device is stationary bicycle on which user experiences reciprocating motion of handlebars and seat as well as usual rotating pedal movements. It offers active and passive movement. The Council on Physical Medicine and Rehabilitation voted to include the apparatus in its list of accepted devices.

Southeastern Section Meets at Dallas

The Southeastern Section of the Southern Medical Association met at Dallas, Texas, recently. The following officers were elected: **Roy A. Dawson**, Chairman; **Sedgwick Mead**, Vice-Chairman, and **Edward Krusen, Jr.**, Secretary.

Training in Treatment of Arthritis

The National Institute of Arthritis and Metabolic Diseases, Bethesda 14, Md., has established a program of clinical traineeships in the prevention, diagnosis and treatment of arthritis and the metabolic diseases. The purpose is to improve the competency of physicians in the treatment and rehabilitation of arthritis patients. For additional information, write to the Chief of Extramural Programs at the Institute.

Clifford H. Arnold

It is with regret that we announce the death on January 26 of Dr. **Clifford H. Arnold**, Tucson, Arizona. Dr. Arnold was a Congress member for many years. His death resulted from coronary occlusion.

BOOK REVIEWS

THE BIOLOGY OF HUMAN STARVATION. By Ancel Keys, Josef Brozek, Austin Henschel, Olaf Mickelsen, and Henry Longstreet Taylor, with the assistance of Ernst Simonson, Angie Sturgeon Skinner, and Samuel M. Wells. Volumes I and II. Cloth. Price of Volume I, \$12.00. Price of Volume II, \$12.00. Pp. 1385. The University of Minnesota Press, Minneapolis, Minnesota, 1950.

This magnificent pair of volumes represents a most thorough-going study of undernutrition done with the help of a group of conscientious objectors during the second World War. The fortitude of these men can hardly be appreciated by anyone who has not witnessed the unrelenting schedule of work, tests, and strains of all descriptions involved in such research, but suggestions may be obtained from the photographs on pages 1119 to 1126, and from descriptions of the mental state of the subjects (Pages 880 to 904).

Volume I is divided into four sections which discuss, respectively, the historical, morphological, biochemical, and physiological aspects of the experiment; Volume II summarizes the psychological aspects, takes up special problems including hunger edema, contains the appendixes including a discussion of wartime rations, and gives detailed tabulations of the original data. Of great medical significance is the chapter on the rate of growth of cancers during starvation, and of special interest to the psychiatrist are the sections on circulation and cardiac function, on fainting and the cardiovascular response to posture, on fitness tests, and on anthropometric procedures. The whole subject has an immediate personal interest to every intelligent reader, and the two historical chapters (pages 3 to 17 and 1247 to 1252) are a terrible catalogue of suffering from which surely humanity ought to learn. Extremely well written, documented, and indexed, these volumes deserve to be in every medical library.

ENZYMES AND ENZYME SYSTEMS: THEIR STATE IN NATURE. Edited by John T. Edsall, M.D., Associate Professor of Biological Chemistry, Harvard University. Pp. 146. Price, \$2.75. Harvard University Press, Cambridge, Mass, 1951.

This is a text which all investigators in the basic medical sciences will wish to have in their libraries. In it are brought together a summary of recent advances in the study of enzymes from the laboratories of the universities of Chicago, Wisconsin, Utah, Pennsylvania, Harvard, and the Medical Nobel Institute in Stockholm. This was made possible by the organization of seminars for workers in the field by the Harvard University Laboratory of Physical Chemistry related to Med-

icine and Public Health, which are reported in part in this publication.

THE 1950 YEAR BOOK OF ENDOCRINOLOGY (January 1950-January 1951). Edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine; Attending Physician (Senior Staff), Hennrich Hospital; Attending Physician, Grant Hospital of Chicago. Cloth. Price, \$5.00. Pp. 499 with illustrations. The Year Book Publishers, Inc., 200 East Illinois Street, Chicago 11, 1951.

This is the first volume of Year Books on Endocrinology. With the ever increasing knowledge in this special field, it became necessary to devote a separate volume to the glands of internal secretion. The large number of articles on the pituitary and adrenals alone would justify a separate book. The knowledge of the functions of both glands has increased tremendously and the interrelationship between the two glands has assumed a far greater importance because of the dramatic effects of cortisone and ACTH. About one-half of the book is concerned with the latest information about the pituitary and the adrenal.

The review of the work for the other glands is reported. Much space is given over to the use of the radioactive iodine in the thyroid field. The significant developments in testicular and ovarian pathology and physiology have increased, as evidenced by the number of articles about these two glands.

The book is edited by Dr. Willard Thompson. His editorial comments are excellent and materially help evaluate the various articles.

MEDICAL TREATMENT. PRINCIPLES AND THEIR APPLICATION. By Geoffrey Evans, M.D., F.R.C.P. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo.

This book contains a great quantity of wisely selected medical information. The sections on infectious, tropical, metabolic and gastrointestinal diseases are especially well done. The section on cardiovascular disease is also well done except possibly the section on peripheral vascular disease in which "Raynaud's Disease" and "Raynaud's Phenomenon" needs clarification. Anticoagulant therapy is becoming increasingly more popular and it appears that the section devoted to anticoagulants is too brief. It omits contraindications to therapy and the recommended therapy for dicumarol intoxication, consisting of 4 mgm. of Vitamin K, intravenously, together with a fresh blood transfusion, cannot be considered the treatment of choice.

The book appears to be one of the better general medical references and is recommended for physicians engaged in a busy general practice.

THE MANAGEMENT OF FRACTURES, DISLOCATIONS AND SPRAINS. By *John A. Key, M.D.*, and *H. E. Contwell, M.D.* Fifth Edition. Cloth. Price, \$15.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo., 1951.

The fifth edition of this well-known textbook on fractures, dislocations and sprains is a definite improvement over its preceding fourth edition published in 1946. The grade of paper is better and the type has been changed to make for easier readability. The illustrations, the majority of which are the same, are of over-all better reproduction, and although a considerable number of the less essential illustrations have been deleted there is an approximately equal number of new illustrations showing some of the more recent changes in the treatment of bony injuries. The actual bulk of the volume is approximately the same as the preceding edition. There have been several significant changes in the text of a specific nature. The chapters on Workman's Compensation affecting fracture cases and on medical legal aspects of fracture cases have been eliminated from the new volume. Certain forms of therapy have been added, particularly intramedullary fixation of fractures of both the shaft of the femur and of the shaft of the tibia. In the treatment of infection and the prophylaxis of infection in open or compound fractures, there has been a transition from the use of sulfonamides to the use of penicillin and the steps in the technique of treatment of open and compound wounds is given in greater detail. Although some of the methods of treatment for specific fractures which are outlined are no longer in common use in many of the teaching centers, their inclusion in the volume is still of considerable importance. Involving, as they do, basic principles which rarely change they make for a clearer understanding of the particular technique in vogue at the present, since they serve to bring the student up through the various stages in the process of treatment of these specific fractures, thereby giving them a clearer and better understanding of the problem as a whole. There are no forms of treatment advocated which are not entirely acceptable to present-day knowledge of orthopedics. This textbook remains one of the classics in the instruction of not only students and residents, but of the general practitioner and the traumatic surgeon as well. It can only be highly recommended for any one whose practice involves the treatment of acute bony injuries.

AN INTRODUCTION TO MATERIA MEDICA AND PHARMACOLOGY. By *Elsie E. Krug, R.N., M.A.*, Instructor in Pharmacology and Anatomy and Physiology, St. Mary's School of Nursing, Rochester, Minn., and *Hugh Alistair McGuigan, Ph.D., M.D.*, Professor Emeritus of Materia Medica, Pharmacology and Therapeutics, University of Illinois, College of Medicine, Chicago. Cloth. Price, \$4.25. Pp. 612 with 37 text illustrations and 10 color plates. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis, 1951.

This textbook is intended to introduce the student nurse to the scientific basis of the use of drugs. Opening chapters discuss general problems of preparation, dosage, and administration; another group of chapters are devoted to pharmacodynamics and toxicology. Succeeding units take up in order the pharmacology of different systems of the body, chemotherapy, metabolism and nutrition, and serums and vaccines, and closing chapters are devoted to a history of materia medica and a summary of drug legislation. The book offers a wealth of information on these subjects, the material is extremely up-to-date, and the facts are generally presented in clear and interesting fashion.

With many other contemporary textbooks this one shares certain weaknesses that deserve comment. Many of these have to do with semantics, a growing science about which textbook writers ought to inform themselves. They should be on guard against using the same word in different senses on the same page (e. g., "pharmacy" on page 562). Sections on history should not repeat all-or-none statements that could not possibly be true ("The doctors were all priests . . ." page 557). The difficulty of identifying the drugs and diseases named in ancient manuscripts with those extant today should be brought to the attention of the student (page 556). Glossaries should not confuse the particular with the general (Acrosol. A medicine mixed with air . . ., page 581). A group should not be confused with part of itself ("parasympathetic drugs" for "drugs that paralyze the parasympathetics," page 269). These examples are pointed out because similar flaws, often much more serious, are so often to be found in current textbooks in the medical field, and because a disregard for semantics so often increases the difficulties of a student in subjects that are baffling enough to begin with.

The book contains an immense amount of valuable information, is very readable, has some attractive illustrations, and is well indexed. It can be highly recommended to the classes for which it is intended.



PHYSICAL MEDICINE ABSTRACTS

Fractures of the Metatarsals and Tarsals. R. J. Bennett.

Indust. Med. & Surg. 20:423 (Sept.) 1951.

Satisfactory results have been obtained in treating 631 cases of fractures of the metatarsal and tarsal bones. Both the frequency and severity of fractures of the bones of the feet are less than ten years ago, owing to intensive safety programs and protective devices for the feet. Prompt reduction is the most important step in the treatment of fractures of the tarsals and metatarsals. Adequate fixation is imperative. In several instances, it was found that the patient was weight-bearing and walking on the metatarsal splint or cast, and in several other instances the patient did not like the treatment, so took the fixation apparatus off and returned or discarded it. Union was found in most simple fracture cases between four and eight weeks. Depending upon the amount of callus present, weight-bearing was allowed in an average of eight to twelve weeks. Once the bones were solid, physical therapy and actual use were started. In a few instances, swelling of the foot and ankle persisted throughout proper reduction and fixation, and continued to be troublesome even when physical therapy and use were started. Back to work was indicated when there was adequate callus plus response to physical therapy and use following removal of the splint. In those cases where there was a delay or failure to restore normal alignment of the fractures and the arches, prolonged temporary disability and severe permanent disability resulted. Once the splint or cast was removed from the foot, active and passive motions were carried out unless pain and too much swelling developed. By far the best therapy to restore the foot to normal function is the actual use of the foot. Massage, whirlpool bath and heat were found to be of value also and in that order.

A Foot By Pass Apparatus for Treating Fractures of the Femur. August W. Spittler, and John J. Brennan.

U. S. Armed Forces M. J. 2:1389 (Sept.) 1951.

This article describes an apparatus to improve the treatment of fractures of the femoral shaft with skeletal traction. It is accomplished by the use of a metal ring placed in the line of traction over the foot. This causes the traction to by-pass the foot. Early institution of knee movement by conversion of the Pearson attachment to an exerciser is facilitated by the use of the metal ring by-pass of the foot. It helps to prevent ankylosis of the knee. The patient is able to extend the knee completely with full clearance for the foot

at any time. Using full extension of the knee as the resting position in the intervals between the exercise periods also is facilitated by the use of the ring. Conventional positional foot splints to prevent equinus contracture readily can be used with the metal ring.

Shoulder Girdle Dysfunction Following Thoracoplasty Combined With Partial Scapulectomy. Harry B. Doppelt, and Jacob Goldberg.

J. Thoracic Surg. 21:6 (June) 1951.

These authors have made a study of skeletal and muscular function changes resulting from thoracoplasty operations on a group of twenty-three patients over a two year period. In a previous paper they reported on scoliosis with concomitant changes in skeletal relationships of the head, neck and shoulders on the operated side, the thorax and pelvis. In this paper they report on skeletal deviations and changes of muscular function of the shoulder girdle on the operated side. It includes patients who have had thoracoplasty and/or partial scapulectomy. The study is based on roentgenograms of the scapula, goniometric measurements, and clinical examinations. Thoracoplasty patients showed an antero-medial displacement of the scapula, with some shoulder girdle elevation and increase of the scapulo-humeral angle, also changes in muscle function consisting of mild disturbance of scapulo-humeral rhythm associated either with no limitation of arm abduction or with limitation of 15 to 20 degrees. Scapulectomy patients showed the same changes but to a greater extent, especially in increase of the scapulohumeral angle and restricted abduction of the humerus. Factors causing disturbance of scapulohumeral rhythm, increased scapulohumeral angle, and limitation of shoulder girdle function are stated to be: the particular muscles affected by surgery, the patients' personalities, and the strength of the muscles prior to surgery.

Radioisotopes in Medicine. Henry D. Diamond.

J. M. Soc. New Jersey 48:420 (Sept.) 1951.

In four of nine patients subjected to intensive treatment of metastatic thyroid cancer with radioactive iodine (I^{131}), definite clinical improvement occurred. Three interesting means of enhancing I^{131} uptake by previously recalcitrant metastatic thyroid cancers have been elucidated. These studies have shown that particular metastatic thyroid cancers are capable of response to thyrotrophic hormone, total thyroidectomy or thyroid destruction, and to thiouracil and prophylthiouracil. The foregoing data suggests that metastatic thyroid cancers are not autonomous com-

pletely, but are alterable by select mechanisms of normal physiology. Radiophosphorus is the agent of choice in the treatment of polycythemia vera at the present time. Comfortable survival in chronic myeloid and chronic lymphatic leukemia patients is increased by the use of radioactive phosphorus (P^{32}). Toxicity from P^{32} as manifest by radiation illness and the production of aplastic anemia is minimal and insignificant when the agents are used judiciously.

Both P^{31} and P^{32} are valuable additions to the medical sciences in the study of the pathologic-physiology and treatment of certain malignant neoplastic diseases.

Effect of Prolonged Motionless Standing on Phases of Cardiac Cycle, Stroke Volumes, and Posterior-Anterior Diameters of the Heart as Studied by the Electrocardiograph. E. E. Edleman, Jr.; Kathryn Willis, and Howard E. Heyer.

J. Applied Physiol. 4:156 (Aug.) 1951.

Prolonged motionless standing was studied with the electrocardiograph. Apparent stroke volumes, posterior-anterior cardiac diameters, blood pressure and phases of the cardiac cycle were determined at approximately 3-minute intervals until syncope. There were apparently three stages in the physiologic response to motionless standing. First, there was a decrease in stroke volume and cardiac posterior-anterior diameters during the first 4 to 12 minutes, probably the result of pooling of blood in the legs. Secondly, there was a temporary rise in the stroke volume associated with an increase in posterior-anterior cardiac diameters. Third, the posterior-anterior cardiac diameters continued to increase with a decline in stroke volume until syncope ensued. The mean blood pressure was maintained until the abrupt onset of syncope.

Use of the Rocking Bed to Augment Ventilation in Patients with Poliomyelitis. Clarence W. Dail; Elizabeth Austin; O. L. Huddleston, and Albert G. Bower.

California Med. 75:15 (July) 1951.

As the first step in an attempt to clarify criteria for use of the rocking bed rather than the respirator as an aid to breathing for patients with weakness of respiratory muscle function caused by poliomyelitis, ventilation studies were done on seven patients with pronounced weakness or paralysis of the respiratory muscles. Average tidal air volume was considerably less when the patient was on the rocking bed than when he was in the respirator. Since the tidal air volume with the patient on the rocking bed represents the maximum that can be produced with the apparatus, whereas the volume in the respirator represents the patient's usual tidal air and the respirator is capable of a greater volume if necessary, it is apparent that in cases of complete paralysis of the respiratory muscles the respirator has a large margin of safety, the rocking bed none.

From clinical observations made on 51 patients who were put upon the rocking bed — 23 of them early in the course of the disease and 28 after they had been ill three months or more — it was concluded that the rocking bed is contraindicated for patients who are febrile and in whom the disease is progressing rapidly, and for those with atelectasis or urinary or pulmonary infection. It must be used with extreme care in the case of patients early in the course of the disease who are not tracheotomized, because of a tendency toward increased accumulation of mucus and the danger of atelectasis. General guides were developed with regard to use of the rocking bed for patients with post-acute poliomyelitis, and somewhat different rules were drawn for use of the apparatus in cases in which there is a chronic respiratory problem. The rocking bed will give artificial respiration in cases of respiratory weakness, but will not provide enough tidal air for the patient with paralysis of the muscles of respiration.

Indications for Tonsillectomy and Adenoidectomy. Frances L. Lederer.

Postgrad. Med. 10:191 (Sept.) 1951.

For some years now, the role of the tonsil and adenoid operation in relation to poliomyelitis has been interesting but controversial. Scientific evidence and statistical analysis may be manipulated at will and serve both the pros and the cons. The problem is still in a state of flux with the medical profession on the defensive, conditioned by the opinion of a public more alarmed than informed. While all present evidence taken objectively does not prove that the operation predisposes to the disease, there is some that is strong enough to suggest caution during severe epidemics. It might be well to consider that the real risk of doing the surgery should not be substituted for the fancied risk of poliomyelitis. However controversial, it would seem that postponement of an "elective" procedure is in the public interest and to the advantage of the physician.

The Impostor — Arthritis of the Spine. William H. Blodgett.

J. Michigan M. Soc. 50:1008 (Sept.) 1951.

Under the diagnostic aliases of lumbago, neuritis, sacroiliac strain, kidney, ureter and bladder disease, ptosis of various organs displaced vertebrae, lumbosacral instability and even herniated nucleus pulposus, the patient with atrophic arthritis of the spine moves from one physician's office to another in search of advice and treatment. The early symptoms and signs of rheumatoid arthritis of the spine simulate many other conditions and since there are remissions and exacerbations in the course of the disease the patient and the physician may accept an incorrect diagnosis and believe that treatment has been effective, only to be disappointed when a recurrence of symptoms occurs. The physical examination of the patient with early

atrophic arthritis of the spine may be very unrevealing. However, there are certain identifying characteristics of the impostor—impostor because the disease for years may wear the mask of other entities. In the absence of any positive clues to diagnosis, repeated examination of the patient may be the deciding factor. A final indication of the presence of early atrophic arthritis of the spine may be that the patient fails to respond to the treatment as outlined for one of the many conditions which are worn as a mask by this slowly progressive lesion of the spine. Failure to respond to treatment should suggest the need for a change in diagnostic impression rather than a change of vitamin, physical therapy or the need for a new endocrine.

Poliomyelitis. Edward J. West, and Peter L. Mathieu, Jr.

Rhode Island M. J. 34:469 (Sept.) 1951.

Some factors of the epidemics of poliomyelitis occurring in Rhode Island are discussed in this article. The Charles V. Chapin Hospital in Providence cares for practically all of the hospitalized cases of poliomyelitis not only in Rhode Island but also in the nearby communities of Massachusetts and Connecticut, so the statistics presented are representative of those derived from an area of approximately three-quarters of a million population. It has been noted for some time that fatigue and excessive muscular activity have a definite predisposing factor toward poliomyelitis. It has been possible to obtain a very definite history of fatigue and exhaustion in most cases of poliomyelitis in adults admitted to the Chapin Hospital. Some have advocated three weeks of rest after any suspicion of poliomyelitis. Treatment at the Chapin Hospital resolves itself to diligent nursing and medical care during the first few days of the illness plus hot packs and physical therapy. Physical therapy consists of active and passive motion and exercise as soon as the patient can tolerate it after the temperature has returned to normal. The hot packs are of much value. In the warm summer months, when hot packs should be the most uncomfortable, the adult patients request them because of the comfort and satisfaction that they derive from them. Their usefulness is not all psychological, because they do relieve painful muscle spasm. The article also discusses possible relationships of tonsillectomy and immunizations to poliomyelitis, and gives a brief review of the last epidemic.

Venous Obstruction in the Upper Extremity. Milburn H. Querna.

Northwest Med. 50:671 (Sept.) 1951.

Venous obstruction occurs infrequently in the upper, as compared with the lower, extremity. It may be of more frequent occurrence than one is led to believe from reports in the literature. The disease is almost never fatal, its course is protracted and often not influenced by treatment, so perhaps this may discourage discussion. It may

occur at any age, is most frequent during the active years, most often in active males and most frequently in the right arm. The onset is heralded by swelling and pain in most cases and may be abrupt or gradual. Often these occur first in the shoulder, then spread down the arm and upward over the pectoral region. Discoloration, most often a cyanotic hue, occasionally pink or red, is noted early. Venous distension is an early prominent finding in all cases. Paresthesias are noted in some patients. The diagnosis rarely presents difficulty. Trauma is considered the most usual inciting factor. The effort may have been lifting a heavy weight, working with the arm overhead, forcible abduction or external rotation of the arm, or a blow on the shoulder or upper chest. Treatment for the most part has been conservative—bed rest, elevation of the arm and heat.

Epidemic Poliomyelitis: Review of Five Hundred Twenty-Six Cases. Maurice Lenarsky; Robert L. Parr, and H. Eugene Seanor.

Am. J. Dis. Child. 82:160 (Aug.) 1951.

The significant clinical and pathological findings in 526 cases of poliomyelitis are presented and discussed. With the exception of a few patients, notably adults, muscle pain was not a predominating feature in this series. It may be that the early institution of moist heat served to minimize this complaint. Relief of muscle tightness and pain was accomplished satisfactorily by the application of hot packs—the "lay-on" type applied to the patient in the prone position and occasionally the Kenny "wrap-around" packs. Warm baths were used early for small children. An attempt was made to evaluate clinically certain drugs that have been advocated for the relief of muscle spasm and pain. Priscoline (2-benzyl-2-imidazoline hydrochloride), a sympathicolytic drug, was administered orally to 68 patients in the dosage used and recommended by Smith. The authors felt that most of the patients were not benefited by its use. It did have a relaxing and analgesic effect in some patients, but this was not consistent or sustained, and when administration of the drug was stopped, tightness recurred. In other patients it was thought that the muscle tightness was increased by the drug, and the return to hot packing gave quick relief. There were uncomfortable side effects such as nausea and vomiting, and since the drug must be continued for long periods, its potentiality for more serious reaction was always present. In general, the physical therapy staff preferred the hot packs, and there was enough personnel to carry out such procedures. The importance of early bed rest and the avoidance of fatigue as therapeutic and preventive measures in poliomyelitis have been stressed. Ressel has shown that there is a close correlation between the extent of muscle weakness and continued physical activity after the onset of the symptoms. Hargreaves and Horstmann have confirmed this. Transpiration of the acutely ill poliomyelitis patient over long distances may

contribute to fatigue and may in itself be hazardous. This is especially true of the bulbar poliomyelitis patient, for whom there is the danger of emergency situations that cannot be adequately handled en route because of lack of equipment and trained personnel.

Spasm of the Rectus Muscle. N. B. Jaffe.

Mil. Surgeon 199:204 (Sept.) 1951.

Spasm of the rectus muscle characterized by sudden painful contraction, tenderness, and lump formation lasting a few minutes, is a very common occurrence. It is more common after 30 years of age, but noted also in the young. Many young war veterans had this condition, which began during the difficulties of open warfare. It may be bilateral, but mostly unilateral on the left. The etiology and pathology are obscure and leave open fields for fancy and speculation. It is not crippling or in any way disabling, but very unpleasant, annoying, leading to nervousness, apprehension and loss of appetite. As it may occur when getting out of bed, it starts off the day with an unpleasant sensation, creating the popular feeling, "waking up on the wrong side," especially among the nervous. The same effect results when it occurs after an enjoyable repast. Many times it was related by the patients that they nearly had an automobile accident while driving when the cramplike episode developed and they were compelled to stop the car. The treatment consists of rest, hot baths, or hot applications, diathermia, electrical treatment, counterirritation, massage, vibration, local injection of procaine or novocain, antispasmodics, sedatives, and x-ray therapy. The immediate treatment which is very effective is to stand up and pull or bend backwards forcibly.

Chronic Empyema. T. Holmes Sellors, and Gordon Cruickshank.

Brit. J. Surg. 38:411 (April) 1951.

The principles of treatment of chronic empyema are three: (1) Elimination of toxic contents; (2) closure of the cavity and (3) restoration of lung function.

Prophylaxis by correct handling of the acute phase is the obvious basis for treatment and this can be best expressed by continued and adequate drainage coupled with intensive physical therapy. A motley variety of drainage and irrigation methods has been advocated from time to time, but these cannot replace the more simple and effective principles just laid down. A chronic empyema once diagnosed must be correctly drained and this drainage constantly supervised until complete healing has occurred, and with this surgical treatment vigorous physical therapy perseveringly pursued. On occasions it is justifiable to consider complete excision of the empyema with its walls and contents, and so remove a harmful dead space, leaving the lung free from constricting scar tissue, but this is a major operation and requires all

the services of a fully equipped thoracic surgical unit. Respiratory physical therapy deserves special mention since it is only carried out with full effect in chest units. The requisite exercises aim at localized and forceful inspiratory efforts with the patient concentrating on moving the area of the empyema. Persistence and encouragement will result in the expansion of an immobile section of chest wall. The lung will follow this movement and help to obliterate the empyema cavity. These objects are easily achieved, but daily, even hourly, practice is essential. Ten to twenty minutes' exercises every waking hour produce results that cannot be obtained in any other way. In an extensive, rigid, chronic empyema a period of months may be required, and in one case success was reached only after a year and a half. The traditional measures of blowing up balloons and the like can be discarded, as they are expiratory in character and not inspiratory. Full postural and general exercises also should be used and the problem is simplified if the patient can be ambulatory for the greater part of the day and can take active physical exercise. For this reason the ordinary conditions pertaining to a general hospital are not ideal for the treatment of chronic empyemata.

Studies in Disorders of Muscle — IV: The Clinical Manifestations and Inheritance of Childhood Progressive Muscular Dystrophy. Frank H. Tyler, and F. S. Stephens.

Ann. Int. Med. 35:169 (July) 1951.

This is a study of 33 kindreds. In these families, 61 patients with childhood progressive muscular dystrophy were found. All living members of these kindreds thought to have neuromuscular disorders have been examined, as have the parents of our patients, their siblings and certain other genetically related individuals, even though these relatives were reported to be normal. The clinical course of the majority of these patients was consistent. Typically, after the onset in early childhood, these patients walked with slowly increasing difficulty until nine or twelve years of age, when they became confined to a wheelchair because of inability to walk without support. In addition to the muscular weakness, they developed contractures in the Achilles, hamstring and biceps tendons which contributed to their disability. The contractures were in some degree postponed by persistent activity and/or physical therapy. Without the most persistent care, the boys became progressively deformed once they were unable to walk, until grotesque deformities were present in the position which the child elected or had to use because of his weakness. The large pelvic girdle muscles were the first involved in a process which spreads centrifugally in an insidious fashion to produce extreme muscular disability. Most of the patients are severely disabled in adolescence and die then or in early adult life. None of these patients has had children.

MEMBERS
American Congress of Physical Medicine
1952 Directory

(See Page 180 for Alphabetical Listing)

Alabama

Davis, Harvey F., VA Hospital, Tuskegee
Reagan, Charles H., VA Hospital, Tuscaloosa
Schwartz, Ferdinand F., 916 S. 20th St., Birmingham 5
Strickland, Benjamin A., Jr., Col. U. S. A. F. (MC), School of Aviation Medicine, Gunter Air Force Base, Montgomery

Arizona

Little, Stillman D., 735 F McDowell, Phoenix

Arkansas

Nolden, Wesley L., Chief, Physical Medicine and Rehabilitation, VA Hospital, Roosevelt Rd., Little Rock
Scully, Francis J., 904 Medical Arts Bldg., Hot Springs
Smith, Euclid, 236 Central Ave., Hot Springs National Park
Tate, James, Lt. Col., MC, U. S. A., Army-Navy Gen. Hospital, Hot Springs

California

Aldes, John H., 385 N. Saltair Ave., Los Angeles 49
Austin, Elizabeth, 1200 N. State St., Los Angeles 33
Baker, Frances, 1 Tilton Ave., San Mateo
Billig, Harvey E., Jr., 401 Ross St., Glendale 7
Biro, Louis P., 452 20th St., Santa Monica
Cailliet, Rene, 802 San Vicente Blvd., Santa Monica
Chapman, Carrie E., Lt. Comdr. (MC), U. S. N., U. S. Naval Hospital, Oakland 14
Christensen, Ernest C., 325 San Juan, Box 697, Loma Linda
Dail, Clarence W., 4942 N. Acacia St., San Gabriel
Dorinson, S. Malvern, 442 Post St., San Francisco 15
Golseth, James G., 841 New York Dr., Altadena
Gruggel, J. Stuart, Comdr. (MC), U. S. N., Navy Yard Disp., Pearl Harbor, T. H., Navy No. 128, FPO, San Francisco
Hibben, John Severy, 547 E. California St., Pasadena 3
Hubbard, Clinton D., 7130 Seville Ave., Huntington Park
Huddleston, O. Leonard, Kabat-Kaiser Inst., 1815 Ocean Front, Santa Monica
Kabat, Herman, Kabat-Kaiser Inst., 280 W. MacArthur Blvd., Oakland 11
Kling, David H., 1052 W. 6th St., Los Angeles 14
Lewi, William G., 1815 Ocean Front, Santa Monica
Maschmeyer, Joseph E., 19 W. Palm Dr., Arcadia
Mohlo, Louis D., % N. P. Hospital, VA Center, Los Angeles 25
Moor, Fred B., 312 N. Boyle Ave., Los Angeles 33
Moore, Richard W., Kabat-Kaiser Inst., 1815 Ocean Front, Santa Monica
Northway, William H., Stanford University Hosp., San Francisco 15

Nyquist, Roy H., Acting Chief, Physical Medicine and Rehabilitation, VA Hospital, Long Beach 4
Osnes, Elias N., 17122 Phillips Ave., R. R. #5, Los Gatos
Psaki, Raoul C., Lt. Col., MC, U. S. A., Letterman Army Hospital, San Francisco
Resnik, Joseph, 1037 Carol Dr., Los Angeles 46
Selle, Wilbur A. (Assoc.), Univ. of Calif., School of Medicine, Los Angeles 24
Stonehill, Theodore, 10730 W. Olympic Blvd., Los Angeles 64
Tratar, Anton A., U. S. Naval Hospital, San Diego 34
Troensegaard, Clement C., Capt. (MC), U. S. N. R., NRS-ONOP, 751 S. Figueroa, Los Angeles 17
Von Friesen, Tamara, % Michael T. Zarotschenzeff, 821 N. Harvard Blvd., Los Angeles 29
White, Arthur E., Col., MC, U. S. A., U. S. Army Hospital, 8040th Army Unit, APO #40, % P. M., San Francisco
Worster, William W., 205 S. Mission Dr., San Gabriel
Yamshon, Leonard J., 224 N. Serrano Ave., Los Angeles 4

Colorado

Dinken, Harold, Department of Physical Medicine and Rehabilitation, Univ. of Colorado Medical Center, 4200 E. Ninth Ave., Denver 7
Gersten, Jerome W., Univ. of Colorado Medical Center, 4200 E. Ninth Ave., Denver 7
Gosling, Robert J., 1045 Irving St., Denver 4
Hoffman, Carl C., VA Hospital, Denver
Luscombe, Harold B., Col., MC, U. S. A., 2825 Holly St., Denver 7
McGovern, Richard E., Officers Mail Section, Fitzsimons Army Hospital, Denver 8
Taylor, Vann S., Maj., MC, U. S. A., Officers Mail Section, Fitzsimons Army Hospital, Denver 8
Twombly, George C., Jr., Dept. Physical Medicine and Rehabilitation, Univ. of Colorado Medical Center, 4200 E. Ninth Ave., Denver 7

Connecticut

Alderman, Irving S., 38 Trumbull St., New Haven
Allen, John C., Chief, Physical Medicine and Rehabilitation, Hartford Hospital, Hartford
Arnold, Hermann B., Beecher Rd., Woodbridge, New Haven 15
Covalt, Nila, Kirkpatrick, Hospital for Chronic Illness, Rocky Hill
Eagan, E. Cecil, Chief, Physical Medicine and Rehabilitation Service, VA Hospital, Newington 11
Edlin, Charles, 24 Central Ave., Waterbury 2
Hines, Thomas F., 57 Colony St., Hamden 14
LaPlume, Albert A., 45 Prospect St., Bristol
Roch, George E., 20 North St., Willimantic
Schuyler, Samuel A., 188 Palm St., Hartford 5

District of Columbia

Barger, Gervase J. P., 1125 Buchanan St., N. W., Washington 11

Crain, Darrell C., 1150 Connecticut Ave., Washington 6
 Hildenbrand, Emil J. C., Garfield Hospital, Washington 1
 Kessler, Harry, VA Central Office, Rm. 846C, Washington 25
 Knudson, Alvin B. C., Chief, Physical Medicine Rehabilitation Div., VA, Dept. of Medicine and Surgery, Washington 25
 Knitert, John H., Lt. Col., MC, U. S. A., Walter Reed Army Hospital, Washington 12
 Levin, Isadore, 1801 Eye St., N. W., Washington 6
 McFarland, J. Wayne, Gen. Conference of S. D. A., 6840 Eastern Ave., Takoma Park, Washington 12
 Sexton, R. Lyman, 1801 Eye St., N. W., Washington 6
 Vivino, Jean J., 2633 16th St., N. W., Washington 9
 Wise, Charles S., George Washington Univ. Hospital, 901 23rd St., N. W., Washington 7

Florida

Becker, Folke, Box 124, Floral City
 Carter, Edward F., 1903 Grand Central, Tampa 6
 Glick, Meyer, 311 Lincoln Rd., Miami Beach 39
 Hollender, Abraham R., 605 Lincoln Rd., Miami Beach 39
 Jewett, Eugene L., 502 E. Colonial Dr., Orlando
 Kleinman, Samuel B., Dade Inst. of Physical Medicine and Rehabilitation, 1520 Lenox Ave., Miami Beach 39
 Melvin, Alexis M., 1150 S. W. 22nd St., Miami 36
 Stansky, Charles, 6606 Fifth Ave., N., St. Petersburg 6
 Stevenson, A. Swope, 108 E. Central Ave., Orlando

Georgia

Bennett, Robert L., Georgia Warm Springs Foundation, Warm Springs
 Britt, Louis P., Georgia Warm Springs Foundation, Warm Springs
 Gardner, William A., R. F. D. #1, Martinez
 Gillette, Harriet E., 73 E. Eleventh St., N. E., Atlanta
 LaJoie, William J., Georgia Warm Springs Foundation, Warm Springs
 McLoughlin, Christopher J., 1010 Medical Arts Bldg., Atlanta 3
 Puce, Arthur M., 890 W. Peachtree St., N. W., Atlanta 3

Illinois

Barnett, George, Physical Medicine and Rehabilitation Service, VA Hospital, Hines
 Benson, George B., 139 Ravine Forest Dr., Lake Bluff
 Blackberg, Solon N., 122 S. Michigan Ave., Chicago 3
 Carter, Howard A. (Assoc.), Council on Physical Medicine and Rehabilitation, American Medical Assn., 535 N. Dearborn St., Chicago 10
 Davia, James E., Chief, Physical Medicine and Rehabilitation, VA Regional Office, Chicago
 Davidsohn, Gusta, Mt. Sinai Hospital, California at 15th Pl., Chicago 8
 DeForest, Ralph E., Council on Physical Medicine and Rehabilitation, American Medical Assn., 535 N. Dearborn St., Chicago 10
 Feinerman, Albert H., Box 31, Macomb
 Ferri, Nicholas A., 124 N. Hamlin Ave., Chicago 24
 Flank, Maxwell D., 1414 S. 16th Ave., Maywood

Gereb, Louis, Physical Medicine and Rehabilitation Service, VA Hospital, Hines
 Hellebrandt, Frances A., Department of Physical Medicine and Rehabilitation, University of Illinois, Research and Educational Hospitals, 1819 W. Polk St., Chicago 12
 Hummon, Irvin F., Jr., 417 N. Kenilworth Ave., Oak Park
 James, James M., Henning
 Jenkins, Alexander, 2500 W. 63rd St., Chicago 29
 Jung, Frederic T., 521 Ridge Ave., Evanston
 Kendell, H. Worley, Institute of Physical Medicine and Rehabilitation, 619 N. Glen Oak, Peoria
 Kobak, Disraeli, 30 N. Michigan Ave., Chicago 2
 Koczur, Joseph, 6630 N. Artesian Ave., Chicago 45
 Logan, Catherine, 414 S. Oak Park Ave., Oak Park
 Miller, Raphael W., 5514 Blackstone Ave., Chicago 37
 Molander, Charles O., Department of Physical Medicine, Michael Reese Hospital, 2813 S. Ellis Ave., Chicago 16
 Newman, Louis B., 3750 Lake Shore Dr., Chicago 13
 Nugent, Oscar B., 231 W. Washington St., Chicago 6
 Oester, Thomas Y., 706 S. Wolcott St., Chicago 12
 Rockey, Victor, 324 W. Galena Ave., Freeport
 Rodgers, David C., 701 E. 47th St., Chicago 15
 Rodriguez, Arthur A., 6630 S. Kimbark Ave., Chicago 37
 Schmitt, Milton G., 6970 N. Clark St., Chicago 26
 Stone, Florence A., 210 Washington St., Waukegan
 Tingler, John J., 4201 W. 26th St., Chicago 23
 Weinzimmer, Harold R., 1211 S. Cicero Ave., Cicero 50

Indiana

Bugel, Harry J., VA Hospital, Fort Benjamin Harrison
 Kent, Herbert, VA Hospital, 1481 W. 10th St., Indianapolis
 Kime, Edwin N. (Hon.), 239 Buckingham Dr., Indianapolis 8
 Kinneman, Robert E., 236 W. North St., Greenfield
 Prentiss, Nelson H., 274 Central Bldg., Ft. Wayne 2
 Sputh, Carl B., 224 N. Meridian St., Indianapolis 4

Iowa

Barr, Guy E., 315-20 Security Bldg., Sioux City 8
 Bowcock, Harold M., VA Hospital, Knoxville, Ia.
 Hines, Harry M. (Assoc.), Dept. of Physiology, State Univ. of Iowa College of Medicine, Iowa City
 Holman, Henry D., First National Bank Bldg., Mason City
 Kos, Clair M., 906 S. Lucas St., Iowa City
 Mantz, Russell L., 201-4 Granby Bldg., Cedar Rapids
 Newman, Robert W., R. R. #2, Iowa City
 Paul, William D., Dept. of Internal Medicine, State University of Iowa, Iowa City
 Samberg, Harry H., Chief, Physical Medicine and Rehabilitation, VA Center, Des Moines 10
 Steindler, Arthur (Hon.), 103 Melrose Rd., Iowa City
 Wahrer, Fredrick L., 415 Masonic Temple Bldg., Marshalltown
 Wray, Robert M., 337 Higley Bldg., Cedar Rapids

Kansas

Blau, Leslie, VA Hospital, Wadsworth
 Pusitz, Manuel E., 401 Central Bldg., Topeka

Rose, Donald L., Kansas Univ. Medical Center,
39th and Rainbow Blvd., Kansas City 3

Kentucky

Boyle, Robert W., VA Hospital, Fort Thomas
Ehrlich, Joshua, Nichols VA Hospital, Louisville
2
Schaffer, Frank J., VA Hospital, Fort Thomas
Willmoth, A. David (Hon.), 829 Starks Bldg.,
Louisville 2

Louisiana

Brewer, Howell, 642 Wilkinson St., Shreveport
Di Paula, Frank R., Veterans Hospital, New Or-
leans
Menendez, Joseph C., 3535 Canal St., New Or-
leans 19
Polmer, Nathan H., 2209 Carondelet St., New Or-
leans 13
Wallace, Robert B., 2285 Kleinert Ave., Baton
Rouge 11
Winokur, Solomon, 4729 Prytania St., New Or-
leans 15

Maine

Burnham, Leon R., VA Center, Togus

Maryland

Mastellone, Aniello F., Lt. Col., MC, U. S. A.,
8107 Tahona Dr., Silver Spring
Rudin, Louis N., VA Hospital, Fort Howard
Smith, Emmett M., Col., MC, U. S. A., 1118 Lan-
caster Rd., Takoma Park
Vaupel, George E., Lt., MC, U. S. N., U. S. Naval
Hospital, National Naval Medical Center, Be-
thesda 14

Massachusetts

Clarke, H. Harrison (Assoc.), 240 Norfolk St.,
Springfield 9
Crowell, Archie D., 107 Franklin St., Framingham
Feldman, Louis, 1516 Commonwealth Ave.,
Brighton 35
Friedland, Fritz, Chief, Physical Medicine and Re-
habilitation, Cushing VA Hospital, Framingham
Geiss, George W., Lt. Col., MC, U. S. A., Chief,
Physical Medicine Service, Murphy Army Hos-
pital, Waltham 54
Harris, Samuel J., 250 Commonwealth Ave., Bos-
ton 16
Hussey, Earle U., 36 Cedar St., Lynn
Kaplan, Julius A., VA Hospital, Northampton
Landis, Eugene (Assoc.), Harvard Medical
School, 25 Shattuck St., Boston 15
Licht, Sidney, 30 Hillside Ave., Cambridge 40
Marden, Wilnot L., 16 Audubon Park, Lynn
Martella, Joseph, VA Hospital, Rutland Heights
Reggio, A. William, School St., Medfield
Kudd, Jacob L., 371 Commonwealth Ave., Boston
15
Shriber, William J., 42 Holman Rd., Auburndale
66
Solomon, Louis, 25 Washington St., Malden 48
Watkins, Arthur L., Chief, Department of Physi-
cal Medicine, Massachusetts Gen. Hospital,
Boston 14
Willgoose, Doratheia M., 1175 Great Plain Ave.,
Needham 92
Wylie, Earl J., 205 Mt. Auburn St., Watertown

Michigan

Cohen, Lewis, 16861 Wyoming Ave., Detroit 21
Deyton, John W., 1420 St. Antoine St., Detroit 26
Drewyer, Glenn E., 5327 W. Reid Rd., Swartz
Creek
Foley, Sydney I., 2217 Mason St., Flint 4

House, Frederic B., 1942 Steere Pl., Ann Arbor
Klaus, Cyril D., 1498 Lake Dr., S. E., Grand Rap-
ids
Malcomson, Joseph E., Detroit Inst. of Physical
Medicine and Rehabilitation, 16861 Wyoming
Ave., Detroit 21
Markel, Joseph M., 18678 Green Lawn Ave., De-
troit 21
Newman, Max K., Detroit Inst. of Physical Medi-
cine and Rehabilitation, 16861 Wyoming Ave.,
Detroit 21
Rae, James W., Jr., University Hospital, Ann Ar-
bor
Schaubel, Howard J., 728 Cambridge Blvd., East
Grand Rapids
Schwartz, John M., 2725 Thomas St., Flint 7
Waddington, Joseph E. G., 3818 Northwestern,
Detroit 6

Minnesota

Bender, Leonard F., Section on Physical Medicine
and Rehabilitation, Mayo Clinic, Rochester
Elkins, Earl C., Section on Physical Medicine and
Rehabilitation, Mayo Clinic, Rochester
Erickson, Don J., Section on Physical Medicine
and Rehabilitation, Mayo Clinic, Rochester
Jensen, Louis C., 5038 34th Ave., S., Minneapolis
17
Knapp, Miland E., 920 S. 7th St., Minneapolis 4
Kottke, Frederic J., W300 University Hospital,
Minneapolis 14
Krusen, Frank H., Section on Physical Medicine
and Rehabilitation, Mayo Clinic, Rochester
Lecklinter, Myron D., 3039 Alabama Ave., Min-
neapolis 16
Martin, Gordon, Section on Physical Medicine and
Rehabilitation, Mayo Clinic, Rochester
Polley, Howard F., 1015 Plummer Circle,
Rochester
Roth, Grace (Assoc.), 837 First St., S., Rochester
Sheard, Charles (Hon.), Stewartville
Treanor, Walter J., Section on Physical Medicine
and Rehabilitation, Mayo Clinic, Rochester
West, Catherine C., 5257 S. Logan Ave., Minne-
apolis 19

Mississippi

Dawson, Calvin D., 131 Veterans Hospital, Jack-
son
Dodson, William A., 1510 Thornton Ave., Gulf-
port

Missouri

Farris, Henry G., 4660 Maryland Ave., St. Louis 8
Harell, Alex, 3665 Connecticut, St. Louis 16
Knese, Luke A., 305 Wellston Bldg., 1506 Hodia-
mont, St. Louis 12
Kotkis, Alexander J., 462 N. Taylor Ave., St.
Louis 8
Mead, Sedgwick, Department of Physical Medi-
cine, Barnes Hospital, 600 S. Kingshighway, St.
Louis 10
Myers, John L., 815 Shukert Bldg., Kansas City 6
O'Reilly, Daniel E., Beaumont Bldg., 3720 Wash-
ington Blvd., St. Louis 8
Paul, David M., VA Hospital, Springfield
Weissenberg, Eugene H., VA Hospital, Jefferson
Barracks, St. Louis 23

Nebraska

Fricke, Fred J., Chief, Physical Medicine Reha-
bilitation Service, VA Hospital, 4101 Wool-
worth Ave., Omaha
Rausten, David S., 3111 S. 44th St., Lincoln 6
Valentine, Linville F., 222 N. Jeffers, North Platte

Nevada

Compton, Edgar L., 131 N. Third St., Las Vegas

New Hampshire

Anderson, Thomas P., Hitchcock Clinic, Hanover

New Jersey

Albano, Frank J., 535 N. Seventh St., Newark 7
 Anderson, William T. (Assoc.), Hanovia Chem. and Mfg. Co., Chestnut St. and N. J. R. R. Ave., Newark 5
 Austin, Henry J., 96 Bellevue Ave., Trenton 8
 Baron, Leo E., 26 Prospect Pl., North Plainfield
 Bernstein, Bertram M., 329 Clearfield Ave., Trenton 8
 Blum, Isador, 376 Morris Ave., Elizabeth 3
 Bradford, Stella M., 9 Northview Ave., Upper Montclair
 Elias, Elmer J., 474 Greenwood Ave., Trenton 9
 Finn, Fred A., 921 Bergen Ave., Jersey City 6
 Frederick, George F., 179 Main St., Woodbridge
 Gershman, Joseph G., 185 E. Madison Ave., Dumont
 Haggerty, D. Leo, 227 N. Warren St., Trenton 8
 Johnson, Sigurd W., 149 Prospect St., Passaic
 Klain, Jules J., Shore Rd., % Marmora P. O., Palermo
 Lehmacher, Frank, 16 Central Ave., Lakewood
 McConaghy, Thomas P., S. W. Corner 10th and Cooper Sts., Camden 2
 Mountford, William E., 217 N. Warren St., Trenton 8
 O'Connor, Michael J., 98 Shanley Ave., Newark 8
 Riemann, Aloysius, 3566 Boulevard H, Jersey City 6
 Rubacky, Joseph F. A., 61 Passaic Ave., Passaic
 Tarbell, Luther A., Reddie School, Hightstown
 Troedsson, Bror S., Orange Memorial Hospital, Orange

New York

Abramson, Arthur S., 294 Fisher Ave., White Plains
 Almer, Julius R., 276 Stanton St., New York 2
 Amoroso, Peter F., 315 E. 116th St., New York 29
 Arnon, David, 1 W. 73rd St., New York 23
 Bassler, Anthony, 121 E. 71st St., New York 21
 Behrend, Hans J., 470 West End Ave., New York 24
 Bierman, William, 471 Park Ave., New York 22
 Bilik, Samuel E., Dept. of Physical Medicine and Rehabilitation, Bellevue Hospital, 415 E. 26th St., New York 10
 Bock, George F., 300 Woolworth Bldg., Watertown
 Bonheim, Herman, 195 Nassau Rd., Roosevelt, L. I.
 Britenstool, Harry, 130 W. 57th St., New York 19
 Britton, Harry, 122 College Ave., Ithaca
 Caliva, Salvatore, 510 Prospect Ave., Syracuse 8
 Carlson, Karl Edward, 400 E. 34th St., New York 16
 Cipollaro, Anthony C., 40 E. 61st St., New York 21
 Coleman, Samuel R., 184-20 90th Ave., Hollis, Jamaica 7, L. I.
 Coss, James A., Jr., 180 Fort Washington Ave., New York 32
 Covalt, Donald A., Dept. of Physical Medicine and Rehabilitation, New York Univ. Coll. of Medicine, 477 First Ave., New York 16
 Currence, John D., 36 E. 36th St., Apt. 12F, New York 16
 Dacso, Michael M., 1078 Madison Ave., New York 28
 Dancik, Daniel, 13 Blair Dr., Huntington
 Darling, Robert C., 620 W. 168th St., New York 32
 Davison, Chester O., 1 Fulton Ct., Poughkeepsie
 Deaver, George G., 111 E. 76th St., New York
 DeFrancesco, John E., 1461 University Ave., Bronx 52
 DeVictoria, C. Lopez, 176 E. 71st St., New York 21
 Dickar, Lewis, 56 Hanson Pl., Brooklyn 17
 Dismond, H. Binga, P. O. Box 61, Sag Harbor
 Dobrin, Leo, 214 E. 163rd St., New York 56
 Donio, Dominic A., 400 E. 34th St., New York 16
 Ebel, Alfred, 80-60 164th St., Jamaica 2
 Echtman, Joseph, 1175 Park Ave., New York 28
 Eisert, Otto, 405 E. 14th St., New York 2
 Estrin, Irving J., 3433 DeKalb Ave., Bronx 67
 Feldman, Samuel, 10 8th St., Brooklyn 17
 Feldstein, Benjamin, 135 Central Park West, New York 23
 Feuer, Samuel G., 132 Lafayette Ave., Brooklyn 5
 Fleck, Henry, 1206 Washington Ave., Bronx 56
 Forster, Sigmund, 3588 Nostrand Ave., Brooklyn 29
 Fuchs, Julius, 1133 Park Ave., New York 28
 Ginsberg, Abraham, 6 W. 74th St., New York 23
 Goldberg, Melvin C., 340 New York Ave., Brooklyn 13
 Goldstein, Louis A., 35 Chestnut St., Rochester 4
 Gottesman, Samuel, 60 Park Ave., New York 16
 Granier, Louis W., P. O. Box 233, Forest Hills 75
 Greenberg, Morris E., 184 Joralemon St., Brooklyn 2
 Grotz, John C., 609 W. Delevan, Buffalo 9
 Grynbaum, Bruce B., 740 West End Ave., New York 25
 Gurewitsch, Arno D., 33 E. 61st St., New York 21
 Hansson, Kristian G., 525 E. 68th St., New York 21
 Harpuder, Karl, Montefiore Hospital, 150 E. Gun Hill Rd., New York 67
 Hatfield, Albert R., Jr., 2709 Genesee St., Utica 3
 Herring, Harold M., 151 Cottage Ave., Mount Vernon
 Hirschberg, Gerald G., 65 Payson Ave., New York 34
 Hoberman, Morton, 175 E. 79th St., New York 21
 Hume, Robert C., 101 Hilltop Rd., Ardsley
 Israel, Martin, 325 W. 45th St., New York 19
 Johnston, Frederick, 524 North Ave., New Rochelle
 Jordan, Henry H., 110 E. 93rd St., New York 28
 Kaplan, Theodore, 1049 Park Ave., New York 28
 Kimball, Ray W., 709 Dewey Ave., Rochester 13
 Klauber, Edward A., 111 Wright St., Staten Island 4
 Kraus, Hans, 30 Central Park S., New York 19
 Levy, Eric L., 1225 Park Ave., New York 28
 Lorenze, Edward J., III, Burke Foundation, White Plains
 Lossef, Samuel, 216 E. 15th St., New York 3
 Lowe, Frederick A., 711 Fourth St., Niagara Falls
 Lowenthal, Milton, 5610 Netherland Ave., New York 71
 Lowman, Edward W., Dept. of Physical Medicine and Rehabilitation, New York Univ. Coll. of Medicine, 477 First Ave., New York 16
 Lubarsky, David A., 170 Maple Ave., White Plains
 Ludwig, Dorothy B., 315 Central Park West, New York 25
 Lustig, Ferdinand, 13 E. 74th St., New York 2
 McClellan, Walter S., Saratoga Springs Commission, Saratoga Springs
 McGuinness, Madge C. L., 48 E. 62nd St., New York 21

Manuzak, Hubert F., U. S. Naval Hospital, St. Albans, L. I.
 Marjey, Elemer J., 5251 Netherland Ave., New York 63
 Marton, Moses H., 1930 Grand Concourse, New York 37
 Meislin, Jack, Franklin D. Roosevelt VA Hospital, Montrose
 Mennell, John M., Drawer J, Cazenovia
 Merker, Louis H., 2350 Webster Ave., New York 57
 Morelewicz, Henry V., 246 George Urban Blvd., Cheektowaga 25
 Moskowitz, Eugene, 220 N. Columbus Ave., Mount Vernon
 Muss, Israel, 1030 Eastern Pkwy., Brooklyn 13
 Neifeld, Harold, 167 Willoughby St., Brooklyn 1
 Neufeld, Irvin, 103 E. 86th St., New York 28
 Neuwirth, Eugene, 11 Lindner Pl., Malverne, L. I.
 Offenthal, Adolph W., 150 W. 55th St., New York 19
 Paley, Samuel M., Hotel Monterey, Broadway and 94th, New York 25
 Pedersen, Victor C., 45 W. 9th St., New York 11
 Poneman, Irving W., 9020 150th St., Jamaica 2, L. I.
 Ralph, Samuel, 101 Forbell St., Brooklyn 8
 Raus, George M., 550 Park Ave., Syracuse 4
 Reiger, Anthony C., 69-60 Grand Ave., Maspeth, L. I.
 Rosenthal, Harry H., 169 Canal St., New York 51
 Rusk, Howard A., Inst. of Physical Medicine and Rehabilitation, 400 E. 34th St., New York 16
 Russek, Allen S., 325 E. 38th St., New York 16
 Safford, Frank K., Jr., 853 Seventh Ave., New York 19
 Schenker, Abraham W., 57 W. 57th St., New York 19
 Schwartz, R. Plato, Strong Memorial Hospital, Rochester 7
 Schwarzschild, Myron (Assoc.), 465 Ocean Ave., Brooklyn 26
 Shapley, Benjamin S., 40-04 Junction Blvd., Corona, Flushing, L. I.
 Shaw, Joseph M., 112 Clinton St., Brooklyn 2
 Shiffman, Morris, 59 Christopher St., New York 14
 Snow, William B., 180 Fort Washington Ave., New York 32
 Spielberg, Ignaz, Chief, Physical Medicine and Rehabilitation Service, VA Hospital, Sunmount
 Stoll, Bernard, 2600 Henry Hudson Pkwy., Bronx 63
 Stoll, Victor (D.D.S.), 1012 Nameoke St., Far Rockaway 91
 Sverdluk, Samuel S., 77 Margaret Ave., Lawrence, L. I.
 Syracuse, Joseph A. E., 359 W. Ferry St., Buffalo 13
 Tepperberg, Irving, 1610 Metropolitan Ave., Bronx 62
 Titus, Edward C. (Hon.), 127 W. 11th St., New York 11
 Tobis, Jerome S., 8422 19th Ave., Brooklyn 14
 Travell, Willard, 9 W. 16th St., New York 11
 Wafer, Raymond F., 35 Dale Rd., Ext., Rochester 10
 Wahlig, Herman G., 173 Seaclyff Ave., Seaclyff
 Walsh, Thomas E., 726 W. Onondaga St., Syracuse 4
 Warshaw, Samuel A., 1373 Ocean Pkwy., Brooklyn 30
 Weinreb, Charles, 800 West End Ave., New York 25
 Weinstein, Max V., 605 Vermont St., Brooklyn 7
 Weiss, Jerome, 1703 Glenwood Rd., Brooklyn 30

Whiting, Herbert S., 139 Haddon Rd., New Hyde Park, L. I.
 Williams, George D., Chief, Physical Medicine Rehabilitation Service, VA Hospital, 3495 Bailey Ave., Buffalo 15
 Witt, Samuel E., 745 Fifth Ave., New York 22
 Wolf, Heinrich F., 667 Madison Ave., New York 21
 Wolf, Mary Anne, 160 W. 77th St., New York 24

North Carolina

Bagby, Bathurst B., Jr., VA Hospital, Swannanoa
 Baker, Lenox, Duke Univ. Hospital, Durham
 Croom, Gabe H., Wesnoca, Asheville
 Moore, Carlton W., 108 Sherman Dr., Fayetteville
 Roberts, David A., VA Hospital, Swannanoa
 Wilson, George D., 308 City Bldg., Asheville

Ohio

Barrett, Charles J., 119 S. Madriver, Bellefontaine
 Bearzy, Herman J., Dept. Physical Medicine and Rehabilitation, Miami Valley Hospital, Dayton 9
 Belai, Austin, 102 Millville Ave., Hamilton
 Berman, David H., 7016 Euclid Ave., Cleveland 3
 Clark, Frank H., 2016 E. 9th St., Cleveland 15
 Cowles, Dorence S., 3191 W. Broad St., Columbus 4
 Davis, Roger Q., 1405 Goodyear Blvd., Akron 5
 Gamble, Shelby, 310 Acton Rd., Columbus 14
 Keeler, Keith C., Department of Physical Medicine, University Hospitals, 2065 Adelbert Rd., Cleveland
 Klement, William W., 4 E. Clifton Ave., Cincinnati 10
 Marting, William F., 311 S. Fifth Ave., Ironton
 Minahan, Thomas A., Jr., 115 W. Liberty St., Hubbard
 Nelson, Paul A., Cleveland Clinic Foundation, 2020 E. 93rd St., Cleveland 6
 Peskind, Samuel, 2224 Overlook Rd., Cleveland 6
 Peters, Eugene W., 628 E. 185th St., Cleveland 19
 Radzynski, Stanley F., VA Hospital, 7300 York Rd., Cleveland 29
 Reese, Edward P., Milton Blvd., Newton Falls
 Rosenberg, Leo, VA Center, Dayton
 Sawyer, Warren C., Sawyer Sanatorium, White Oaks Farm, Marion
 Seybold, Nicholas J., 2803 Summit St., Toledo 11
 Smith, Ivan C., 210 Home Savings and Loan Bldg., Youngstown 3
 Solomon, Walter M., 1032 B. F. Keith Bldg., Cleveland 15
 Stecher, Robert M., City Hospital, Cleveland 9
 Steves, Mervin F., 2404 Auburn Ave., Cincinnati 19
 Treister, Bert A., Center-Mayfield Medical Bldg., 1481 Warrensville Center Rd., Cleveland 21
 Woodmansee, Archie D., 403 E. Market St., Washington Court House
 Worden, Ralph E., Dept. Physical Medicine and Rehabilitation, Ohio State Univ. School of Medicine, Columbus
 Zankel, Harry, Chief, Physical Medicine Rehabilitation Service, Crile VA Hospital, Cleveland 29
 Zeiter, Walter J., Cleveland Clinic Foundation, 2020 E. 93rd St., Cleveland 6

Oklahoma

Brighton, Charles E., 604 S. Cincinnati Ave., Tulsa 3
 George, Ella Mary, 708½ N. E. 14th St., Oklahoma City 4

Goldfain, Ephraim, 228 N. W. 13th St., Oklahoma City 3
 Hubbard, John C., 1501 N. E. 11th St., Oklahoma City 4
 Schlesinger, Robert A., 4728 W. Okmulgee, Muskogee

Oregon

Fowles, Everill W., 431 Vista Rd., Oswego 3
 Jones, Arthur C., 419 Mayer Bldg., Portland 5
 Martini, Arthur P., 132 E. Broadway, Eugene

Pennsylvania

Anastasia, John J., 635 High St., Pottstown
 Bonner, Francis J., 125 Argyle Rd., Ardmore
 Cahn, Morris L., 551 N. 11th St., Reading
 Clayborne, Moses, 364 Bedford St., Johnstown
 Converse, James M., 416 Pine St., Williamsport 8
 Dear, Richard H., Lt. Col., MC, U. S. A., Valley Forge Army Hospital, Phoenixville
 Deckard, Park A., 814 N. Second St., Harrisburg
 DeRoy, Mayer S., 1004 May Bldg., Pittsburgh 22
 Dreier, Joseph F., 250 S. River St., Wilkes-Barre
 Ferderber, Murray B., 5722 Fifth Ave., Pittsburgh 32
 Fine, Raymond M., 1805 E. Tioga St., Philadelphia 34
 Follweiler, Frank L., 423 York Rd., Jenkintown
 Hayward, George, 839 Park Ave., Meadville
 Hollander, Joseph L., Hospital of Univ. of Pennsylvania, Philadelphia 4
 Hughes, Robert C., Paoli
 Hull, Ben L., 1309 11th St., Altoona
 Hunter, John R. W., 22 Main St., Lewistown
 Johnson, William T., 512 Ogden Ave., Swarthmore
 Johnston, J. Murl, 659 Washington Rd., Pittsburgh 28
 Kistler, Paul M., 330 E. Lancaster Ave., Wayne
 Koppel, Alexander, 4068 Roosevelt Blvd., Philadelphia 24
 Kornbluh, Igcho H., 1241 W. Lehigh Ave., Philadelphia 33
 Larsen, E. Noer, 40 W. Long Ave., DuBois
 Lebo, Arland A., Nesfville, Lancaster County
 Lefkoe, Harold, Meeting House and Kingsley Rds., Jenkintown
 Levenson, Carl, 402 E. 13th St., Chester
 Martucci, Albert A., Abington Memorial Hospital, Abington
 Mauriello, Nicholas D., 120 S. Franklin St., Wilkes-Barre
 McKinstry, Guy H., Hillview Clinic, Inc., P. O. Box 483, Washington
 Machover, Saul, Veterans Hospital, Pittsburgh 15
 Mehler, Carl J., 4400 Center Ave., Pittsburgh 13
 Miller, Ruth N., Christian H. Buhl Hospital, Sharon
 Moyer, Dwight L., 1166 Wyoming Ave., Fort Fort
 Piersol, George M., Dept. of Physical Medicine, University Hospital, 3600 Spruce St., Philadelphia 4
 Pollock, Arthur E., 1217 14th Ave., Altoona
 Psaki, Constantine G., 326 W. Chelton Ave., Philadelphia 44
 Riddles, Paul W., 533 Locust St., Johnstown
 Rosen, Samuel J., 3512 5th Ave., Pittsburgh 13
 Rothermel, Earl W., 746 N. 10th St., Reading
 Rudolph, Herman I., 400 N. 5th St., Reading
 Rumbaugh, Ulrich D., 540 Ford Ave., Kingston
 Schatz, William J., 1022 Walnut St., Allentown
 Schmidt, William H., 805 Medical Arts Bldg., Philadelphia 2
 Sherman, Samuel, 3500 Fifth Ave. Bldg., Pittsburgh 13
 Sherrill, Alvan W., 121 University Pl., Pittsburgh 13

Shires, Edward B., Lt. Col. MC, U. S. A., 1610 Juniper St., Norristown
 Smith, Richard T., Benjamin Franklin Clinic, 330 S. Ninth St., Philadelphia 7
 Stoner, Emery K., 222 E. Mt. Pleasant Ave., Philadelphia 19
 Sussman, Nathan, 805 N. 2nd St., Harrisburg
 Sweeney, Francis X., 3175 Belgrade St., Philadelphia 34
 Thompson, David L., 5837 Race St., Philadelphia 39
 Titus, Norman E., 401 W. Miner St., West Chester
 Trommer, Philip R., 258 S. 18th St., Philadelphia 3
 Ulanski, Benjamin, 4410 Germantown Ave., Philadelphia 40
 Volpe, Peter A., VA Hospital, Box 9818, Aspinwall
 Webb, Henry P., 6410 Rising Sun Ave., Philadelphia 11
 Weisblum, Maurice, 1823 Pine St., Philadelphia 3
 Wright, Jessie, 142 Bellefield Ave., Pittsburgh 13

Rhode Island

Brooke, Charles R., VA Hospital, Davis Park, Providence 8
 Brown, Byron J., 448 Hope St., Providence 6
 Tefft, Benjamin F., 185 Washington St., West Warwick

Tennessee

Balsam, Frederick J., Physical Medicine and Rehabilitation Service, Kennedy VA Hospital, Memphis 15
 Chance, Hugh C., East Colwyn, Cumberland Gap
 Mahoney, Florence I., Physical Medicine and Rehabilitation Service, Kennedy VA Hospital, Memphis 15
 Smith, Omar E., 917 S. Cooper St., Memphis 4
 von Wersowetz, Odon F., Physical Medicine and Rehabilitation Service, Thayer VA Hospital, Nashville 5
 Walker, William A., 306 4th Ave., N., Lewisburg
 Wiley, Bert C., 304 Mayflower Rd., Knoxville 20

Texas

Boynton, Ben L., Chief, Physical Medicine Rehabilitation Service, 4058 Dunbarton Rd., Houston
 Buie, Neil D., Jr., 229 Coleman St., Marlin
 Cayo, Ernest P., Santa Rosa Hospital, San Antonio
 Flannery, John J., Hospital in the Hills, Blanco
 Grobman, Martin E., 3213 Live Oak, Waco
 Hart, W. Lee (Hon.), 133 E. Mulberry, San Antonio 1
 Jenkins, Jesse G., Scott and White Clinic, Temple
 Krusen, Edward M., Jr., 1907 Euclid St., Dallas 6
 Ledbetter, Harry W., Hamilton Bldg., Wichita Falls
 Leden, Ursula M., 1907 Euclid St., Dallas 6
 Schaeffer, Joseph N., 3750th Med. Group, Sheppard AFB
 Searl, Howard A., VA Hospital, McKinney
 Selke, Oscar O., Jr., Hermann Hospital, Houston 5
 Shields, Charles D., Lt. Col., MC, U. S. A., 1017 Gorgas Circle, Ft. Sam Houston
 Sutch, Vincent J., 342 W. Main, Kerrville
 Wade, T. W., 5945 Lewis St., Dallas 6
 Williams, Clark B., Wm. Beaumont Army Hospital, Fort Bliss

Utah

Rosenberg, Harold, 1139 Herbert Ave., Salt Lake City 2

Virginia

- Buchanan, Josephine J., 2873 S. Buchanan St., Arlington
 Dawson, A. Ray, 3416 Wythe Ave., Richmond 21
 Duvall, Ellen Neall (Assoc.), 6523 Patterson Ave., Richmond
 Ferry, Allen M., 25th and Army-Navy Dr., S., Arlington
 Fischer, Ernst, 3318 Chatham Rd., Richmond 22
 Fitzgerald, James O., Jr., 1103 W. Franklin St., Richmond 20
 Fitzpatrick, William J., McGuire VA Hospital, Richmond
 Jarman, Miletus B., The Homestead, Hot Springs
 King, Llewellyn H., Veterans Hospital, Kecoughtan
 Lee, Walter J., Baruch Center of Physical Medicine and Rehabilitation, Medical Coll. of Virginia, Richmond 19
 Mitchell, Norman, VA Hospital, Richmond
 Park, Herbert W., Woodrow Wilson Rehabilitation Center, Fishersville
 Weems, Rachel E., 114 N. Center St., Ashland

Washington

- Heath, Sherburne W., Jr., VA Hospital, 4435 Beacon Ave., Seattle 8
 Kelly, Sylvester M., Col. MC, U. S. A., Quarters 463 Butar Ave., Fort Lewis
 Lund, Herman, Chief, Physical Medicine and Rehabilitation, VA Hospital, Walla Walla

West Virginia

- Hudgins, Archibald P., 402-03 Professional Bldg., Charleston
 Zintek, Sylvester S., Chief, Physical Medicine, Newton D. Baker Hospital, Martinsburg

Wisconsin

- Anderson, F. A. (Assoc.), Burdick Corporation, Milton
 Crosley, George E., Milton
 Egan, William J., 720 N. Jefferson St., Milwaukee 2
 Freedman, Albert L., 606-10 Bellin Bldg., Green Bay
 Hayes, Dean M., 710 E. Glendale Ave., Apt. #2, Milwaukee 11
 Holmquest, Harold J. (Assoc.), 4856 W. Electric Ave., Milwaukee 14
 Lawrence, Gerald P., VA Center, Wood
 Meanwell, Walter E., 110 E. Main St., Madison 3
 Piaskoski, Ray, Chief, Physical Medicine and Rehabilitation, VA Hospital, Wood
 Rasmussen, Alfred T., 210 Linker Bldg., La Crosse
 Wyman, John F., Sacred Heart Sanitarium, Milwaukee

Canada

- Adamson, Morris C., Univ. of Alberta Hospital, Edmonton, Alberta
 Bell, Christopher, 1244 W. 48th Ave., Vancouver, B. C.
 Brown, Norman, 1495 Crescent St., Montreal, Quebec
 Coffey, Theodore H., 97 Base Line Rd., London, Ontario
 Dwyer, Charles H., Vancouver General Hospital, Vancouver, B. C.
 Ethier, Joseph A. C., 84 Rue King Ouest, Sherbrooke, Quebec
 Fisk, Guy Hubert, 592 Walpole Ave., Montreal 16, Quebec

- Gingras, Gustave, Director of Physical Medicine, Queen Mary Veterans Hospital, Montreal, Quebec
 Harvey, Frederick W., 4007 Dorchester, Montreal, Quebec
 Horn, Stanley, 85 Court St., Sherbrooke, Quebec
 Jousse, Albin T., 66 Willowbank Blvd., Toronto 12, Ontario
 Kidd, James A., Perth, Ontario
 Lawson, Gordon, 56 Lawrence Ave., E., Toronto, Ontario
 McGuffin, Chester, 220 12th Ave., W., Calgary, Alberta
 McRae, Joseph R., 1989 Queen St., E., Toronto, Ontario

Cuba

- Castillo, Regina, Santa Catalina 209 Este, Vibora, Havana
 Yanez, Carlos M., 42 No. 7, entre 1ª y 3ª Ave., Miramar, Havana

Puerto Rico

- Flax Herman J., Professional Bldg., #306, Santurce
 Storms, Harold D., Dir. Physical Medicine and Rehabilitation, Professional Bldg., Santurce

Mexico

- Chavez, Nicandro, Facultad Nacional de Medicina, Queretaro 24, Mexico, D. F.
 Orozco, Jaime Matus, Tepic 126, Mexico, D. F.
 Quezada, Juan Jose, Calle Cuba #58, Mexico, D. F.
 Tohen, Z., Alfonso, Guanajuato 224, Mexico, D. F.

Foreign

- Bauwens, Philippe, Director, Dept. of Physical Medicine, St. Thomas Hospital, London, S. E. 1, England
 Bessemans, A. (Hon.), Kluyskensstraat 21, Ghent, Belgium
 Bianchi, Waldemar, Ave. Franklin Roosevelt 126-5, Rio de Janeiro, D. F., Brazil
 Carapanayiotis, John, Zacharo, Olympias, Greece
 Cassinoni, Mario A., Professor de Fisica Medica de la Facultad Medicina, Soriano 1171, Montevideo, Uruguay
 Clemmensen, Svend V., Kommunehospital, Copenhagen, Denmark
 Godinho, Jose De Oliveira, R. D. Joao V. 24, Lisbon, Portugal
 Gunalp, Fevzi, Sisli Cocuk Hastahanesi, Fizyoterapi Mutehassisi, Istanbul, Turkey
 Kiernander, Basil, 12 Harley St., London, W. 1, England
 Luzes, Francisco Formigal, 164 Av. da Liberdade, Lisboa, Portugal
 Mennell, James B. (Hon.), Courts of the Morning Rake, Liss, Hants, England
 Moraes, Waldo R., Rua Canada 233, Sao Paulo, Brazil
 Nova, Fernando, Caixa Postal 680, Salvador Bahia, Brazil
 Pedrosso Filho, Arnaldo, 13 de Maio, 1563, Sao Paulo, Brazil
 Peylan, Adam, 72 Allenby Rd., Tel-Aviv, Israel
 Schembri, John, Physical Medicine and Rehabilitation Clinic, 300 Kingsway, Valletta, Malta
 Taliberti, Roberto, Clinica de Reabilitacao Fisica, Rua Rego Freitas #279, Sao Paulo, Brazil

ALPHABETICAL INDEX OF MEMBERS OF THE AMERICAN CONGRESS OF PHYSICAL MEDICINE

The address which follows each name indicates the section of the geographic directory where complete address is given.

Abramson, A. S., White Plains, N. Y.
Adamson, M. C., Edmonton, Alberta, Can.
Albano, F. J., Newark, N. J.
Alderman, I. S., New Haven, Conn.
Aldes, J. H., Los Angeles, Cal.
Allen, J. C., Hartford, Conn.
Almer, J. R., New York, N. Y.
Amoroso, P. F., New York, N. Y.
Anastasia, J. J., Pottstown, Pa.
Anderson, F. A., Milton, Wis.
Anderson, T. P., Hanover, N. H.
Anderson, W. T., Jr., Newark, N. J.
Arnold, H. B., New Haven, Conn.
Arnon, D., New York, N. Y.
Austin, Elizabeth, Los Angeles, Cal.
Austin, H. J., Trenton, N. J.
Bagby, B. B., Jr., Swannanoa, N. C.
Baker, Frances, San Mateo, Cal.
Baker, L. D., Durham, N. C.
Balsam, F. J., Memphis, Tenn.
Barger, G. J. P., Washington, D. C.
Barnett, G., Hines, Ill.
Baron, L. E., North Plainfield, N. J.
Barr, G. E., Sioux City, Iowa.
Barrett, C. L., Bellefontaine, Ohio.
Bassler, A., New York, N. Y.
Bauwens, P., London, S. E. 1, England.
Beary, H. J., Dayton, Ohio.
Becker, F., Floral City, Fla.
Behrend, H. J., New York, N. Y.
Belai, A., Hamilton, Ohio.
Bell, C. H. C., Vancouver, B. C., Can.
Bender, L. F., Rochester, Minn.
Bennett, R. L., Warm Springs, Ga.
Benson, G. B., Lake Bluff, Ill.
Berman, D. H., Cleveland, Ohio.
Bernstein, B. M., Trenton, N. J.
Bessemans, A., Ghent, Belgium.
Bianchi, W., Rio de Janeiro, Brazil, S. A.
Bierman, W., New York, N. Y.
Bilik, S. E., New York, N. Y.
Billig, H. E., Jr., Glendale, Cal.
Biro, L. P., Santa Monica, Cal.
Blackberg, S. N., Chicago, Ill.
Blau, L., Wadsworth, Kans.
Blum, I., Elizabeth, N. J.
Bock, G. F., Watertown, N. Y.
Bonheim, H., Roosevelt, L. I., N. Y.
Bonner, F. I., Ardmore, Pa.
Bowcock, H. M., Knoxville, Iowa.
Boyle, R. W., Fort Thomas, Ky.
Boynton, B. L., Houston, Texas.
Bradford, Stella S., Upper Montclair, N. J.
Brewer, H., Shreveport, La.
Brighton, C. E., Tulsa, Okla.
Brittenstool, H., New York, N. Y.
Britt, L. P., Warm Springs, Ga.
Britton, H. A., Ithaca, N. Y.
Brooke, C. R., Davis Park, Providence, R. I.
Brown, B. J., Providence, R. I.
Brown, N., Montreal, Que., Can.
Buchanan, Josephine J., Arlington, Va.

Bugel, H. J., Ft. Benjamin Harrison, Ind.
Buie, N. D., Jr., Marlin, Texas.
Burnham, L. R., Togus, Me.
Cahn, M. L., Reading, Pa.
Cailliet, Rene, Santa Monica, Cal.
Caliva, S., Syracuse, N. Y.
Carapanayiotis, J., Zacharo, Olympias, Greece.
Carlson, K. E., New York, N. Y.
Carter, E. F., Tampa, Fla.
Carter, H. A., Chicago, Ill.
Cassinoni, M., Montevideo, Uruguay, S. A.
Castillo, Regina, Havana, Cuba.
Cayo, E. P., San Antonio, Texas.
Chance, H. C., Cumberland Gap, Tenn.
Chapman, Carrie E., Oakland, Cal.
Chavez, N., Mexico, D. F., Mex.
Christensen, E. C., Loma Linda, Cal.
Cipollaro, A., New York, N. Y.
Clark, F. H., Cleveland, Ohio.
Clarke, H. H., Springfield, Mass.
Clayborne, M., Johnstown, Pa.
Clemmesen, S. V., Copenhagen, Denmark
Coffey, T. H., London, Ont., Can.
Cohen, L., Detroit, Mich.
Coleman, S. R., Jamaica, L. I., N. Y.
Compton, E. L., Las Vegas, Nev.
Converse, J. M., Williamsport, Pa.
Coss, J. A., Jr., New York, N. Y.
Covalt, D. A., New York, N. Y.
Covalt, Nila K., Rocky Hill, Conn.
Cowles, D. S., Columbus, Ohio.
Crain, D. C., Washington, D. C.
Croom, G. H., Asheville, N. C.
Crosley, G. E., Milton, Wis.
Crowell, A. D., Framingham, Mass.
Currence, J. D., New York, N. Y.
Dacso, M. M., New York, N. Y.
Dail, C. W., San Gabriel, Cal.
Dancik, D., Huntington, N. Y.
Darling, R. C., New York, N. Y.
Davia, J. E., Chicago, Ill.
Davidsohn, Gusta, Chicago, Ill.
Davis, H. F., Tuskegee, Ala.
Davis, R. Q., Akron, Ohio.
Davison, C. O., Poughkeepsie, N. Y.
Dawson, A. R., Richmond, Va.
Dawson, C. D., Jackson, Miss.
Dear, R. H., Phoenixville, Pa.
Deaver, G. G., New York, N. Y.
Deckard, P. A., Harrisburg, Pa.
De Forest, R. E., Chicago, Ill.
De Francesco, J. E., Bronx, N. Y.
De Roy, M. S., Pittsburgh, Pa.
De Victoria, C. L., New York, N. Y.
Deyton, J. W., Detroit, Mich.
Dickar, L., Brooklyn, N. Y.
Dinken, H., Denver, Colo.
Di Paula, F. R., New Orleans, La.
Dismond, H. B., Sag Harbor, N. Y.
Dobrin, L., New York, N. Y.
Dodson, W. A., Gulfport, Miss.
Donio, D. A., New York, N. Y.

Dorinson, S. M., San Francisco, Cal.
 Dreier, J. F., Wilkes-Barre, Pa.
 Drewyer, G. E., Swartz Creek, Mich.
 Duval, Ellen N., Richmond, Va.
 Dwyer, C. H., Vancouver, B. C., Can.

Eagan, E. C., Newtonington, Conn.
 Ebel, A., Jamaica, N. Y.
 Echtman, J., New York, N. Y.
 Edlin, C., Waterbury, Conn.
 Egan, W. J., Milwaukee, Wis.
 Ehrlich, J., Louisville, Ky.
 Eisert, O., New York, N. Y.
 Elkins, E. J., Trenton, N. J.
 Elkins, E. C., Rochester, Minn.
 Erickson, D. J., Rochester, Minn.
 Estrin, I. J., Bronx, N. Y.
 Ethier, J. A. C., Sherbrooke, Que., Can.

Farris, H. G., St. Louis, Mo.
 Feinerman, A. H., Macomb, Ill.
 Feldman, L., Brighton, Mass.
 Feldman, S., Brooklyn, N. Y.
 Feldstein, B., New York, N. Y.
 Ferderber, M. B., Pittsburgh, Pa.
 Ferri, N. A., Chicago, Ill.
 Ferry, A. M., Arlington, Va.
 Feuer, S. G., Brooklyn, N. Y.
 Fine, R. M., Philadelphia, Pa.
 Finn, F. A., Jersey City, N. J.
 Fischer, E., Richmond, Va.
 Fisk, G. H., Montreal, Que., Can.
 Fitzgerald, J. O., Jr., Richmond, Va.
 Fitzpatrick, W. J., Richmond, Va.
 Flank, M. D., Maywood, Ill.
 Flannery, J. J., Blanco, Texas.
 Flax, H. J., Santurce, P. R.
 Fleck, H., New York, N. Y.
 Foley, S. I., Flint, Mich.
 Follweiler, F. L., Jenkintown, Pa.
 Forster, S., Brooklyn, N. Y.
 Fowles, E. W., Oswego, Ore.
 Frederick, G. F., Woodbridge, N. J.
 Freedman, A. L., Green Bay, Wis.
 Fricke, F. J., Omaha, Nebr.
 Friedland, F., Framingham, Mass.
 Fuchs, J., New York, N. Y.

Gamble, S. G., Columbus, Ohio.
 Gardner, W. A., Martinez, Ga.
 George, Ella M., Oklahoma City, Okla.
 Geiss, G. W., Waltham, Mass.
 Gereb, L., Hines, Ill.
 Gershman, J. G., Dumont, N. J.
 Gersten, J. W., Denver, Colo.
 Gillette, Harriet E., Atlanta, Ga.
 Gingras, G., Montreal, Que., Can.
 Ginsberg, A. J., New York, N. Y.
 Glick, M., Miami Beach, Fla.
 Godinho, Jose de Oliveira, Lisbon, Portugal.
 Goldberg, M. C., Brooklyn, N. Y.
 Goldfain, E., Oklahoma City, Okla.
 Goldstein, L. A., Rochester, N. Y.
 Golseth, J. G., Altadena, Cal.
 Gosling, R. J., Denver, Colo.
 Gottesman, S., New York, N. Y.
 Granier, L. W., Forest Hills, N. Y.
 Greenberg, M. E., Brooklyn, N. Y.
 Grobman, M. E., Waco, Texas.
 Grotz, J. C., Buffalo, N. Y.
 Gruggel, J. S., San Francisco, Cal.
 Grynbaum, B. B., New York, N. Y.
 Gunalp, F., Istanbul, Turkey.
 Gurewitsch, A. D., New York, N. Y.

Haggerty, D. L., Trenton, N. J.
 Hansson, K. G., New York, N. Y.

Harell, A., St. Louis, Mo.
 Harpuder, K., New York, N. Y.
 Harris, S. J., Boston, Mass.
 Hart, W. L., San Antonio, Texas.
 Harvey, F. W., Montreal, Que., Can.
 Hatfield, A. R., Jr., Utica, N. Y.
 Hayes, D. M., Milwaukee, Wis.
 Hayward, G. E., Meadville, Pa.
 Heath, S. W., Jr., Seattle, Wash.
 Hellebrandt, Frances A., Chicago, Ill.
 Herring, H. M., Mt. Vernon, N. Y.
 Hibben, J. S., Pasadena, Cal.
 Hildenbrand, E. J. C., Washington, D. C.
 Hines, H. M., Iowa City, Iowa.
 Hines, T. F., Hamden, Conn.
 Hirschberg, G. G., New York, N. Y.
 Hoberman, M., New York, N. Y.
 Hoffman, C. C., Denver, Colo.
 Hollander, J. L., Philadelphia, Pa.
 Hollender, A. R., Miami Beach, Fla.
 Holman, H. D., Mason City, Iowa.
 Holmquest, H. J., Milwaukee, Wis.
 Horn, S., Sherbrooke, Que., Can.
 House, F. B., Ann Arbor, Mich.
 Hubbard, C. D., Huntington Park, Cal.
 Hubbard, J. C., Oklahoma City, Okla.
 Huddleston, O. L., Santa Monica, Cal.
 Hudgins, A. P., Charleston, West Va.
 Hughes, R. C., Paoli, Pa.
 Hull, Ben L., Altoona, Pa.
 Hume, R. C., Ardsley, N. Y.
 Hummon, I. F., Jr., Oak Park, Ill.
 Hunter, J. R. W., Lewistown, Pa.
 Hussey, E. U., Lynn, Mass.

Israel, M., New York, N. Y.

James, J. M., Henning, Ill.
 Jarman, M. B., Hot Springs, Va.
 Jenkins, A., Chicago, Ill.
 Jenkins, J., Temple, Tex.
 Jensen, L. C., Minneapolis, Minn.
 Jewett, E. L., Orlando, Fla.
 Johnson, S. W., Passaic, N. J.
 Johnson, W. T., Swarthmore, Pa.
 Johnston, F. H., New Rochelle, N. Y.
 Johnston, J. M., Pittsburgh, Pa.
 Jones, A. C., Portland, Ore.
 Jordan, H. H., New York, N. Y.
 Jousse, A. T., Toronto, Ont., Can.
 Jung, F. T., Evanston, Ill.

Kabat, H., Oakland, Cal.
 Kaplan, J. A., Northampton, Mass.
 Kaplan, T., New York, N. Y.
 Keeler, K. C., Cleveland, Ohio.
 Kelly, S. M., Ft. Lewis, Wash.
 Kendall, H. W., Peoria, Ill.
 Kent, H., Indianapolis, Ind.
 Kessler, H., Washington, D. C.
 Kidd, J. A., Perth, Ont., Can.
 Kiernander, B., London, W. I., England.
 Kimball, R. W., Rochester, N. Y.
 Kime, E. N., Indianapolis, Ind.
 King, L. H., Kecoughtan, Va.
 Kinneman, R. E., Greenfield, Ind.
 Kistler, P. M., Wayne, Pa.
 Klain, J., Palermo, N. J.
 Klauber, E. A., Staten Island, N. Y.
 Klaus, C., Grand Rapids, Mich.
 Kleinman, S. B., Miami Beach, Fla.
 Klement, W. W., Cincinnati, Ohio.
 Kling, D. H., Los Angeles, Cal.
 Knapp, M. E., Minneapolis, Minn.
 Knese, L. A., St. Louis, Mo.
 Knudson, A. B. C., Washington, D. C.

- Kobak, D., Chicago, Ill.
 Koczur, J., Chicago, Ill.
 Koppel, A., Philadelphia, Pa.
 Kornbluh, I. H., Philadelphia, Pa.
 Kos, C. M., Iowa City, Iowa.
 Kotkis, A. J., St. Louis, Mo.
 Kottke, F. J., Minneapolis, Minn.
 Kraus, E. M., New York, N. Y.
 Krusen, F. H., Dallas, Tex.
 Krusen, F. H., Rochester, Minn.
 Kuitert, J. H., Washington, D. C.
- LaJoie, W. J., Warm Springs, Ga.
 Landis, E., Boston, Mass.
 LaPlume, A. A., Bristol, Conn.
 Larsen, E. N., DuBois, Pa.
 Lawrence, G. P., Wood, Wis.
 Lawson, G. A., Toronto, Ont., Can.
 Lebo, A. A., Neffsville, Pa.
 Lecklitner, M. D., Minneapolis, Minn.
 Ledbetter, H. W., Wichita Falls, Tex.
 Leden, Ursula M., Dallas, Tex.
 Lee, W. J., Richmond, Va.
 Leikoe, H., Jenkintown, Pa.
 Lehmacher, F., Lakewood, N. J.
 Levenson, C., Chester, Pa.
 Levin, I., Washington, D. C.
 Levy, E. L., New York, N. Y.
 Lewi, W. G., Santa Monica, Cal.
 Licht, S., Cambridge, Mass.
 Little, S. D., Phoenix, Ariz.
 Logan, Catherine, Oak Park, Ill.
 Lorenze, E. J., White Plains, N. Y.
 Lossef, S., New York, N. Y.
 Lowe, F. A., Niagara Falls, N. Y.
 Lowenthal, M., New York, N. Y.
 Lowman, E. W., New York, N. Y.
 Lubarsky, D. A., White Plains, N. Y.
 Ludwig, Dorothy B., New York, N. Y.
 Lund, H. C., Walla Walla, Wash.
 Luscombe, H. B., Denver, Colo.
 Lustig, F., New York, N. Y.
 Luzes, F. F., Lisboa, Portugal.
- McClellan, W. S., Saratoga Springs, N. Y.
 McConaghy, T. P., Camden, N. J.
 McFarland, J. W., Washington, D. C.
 McGovern, R. E., Denver, Colo.
 McGuffin, C. F., Calgary, Alta., Can.
 McGuinness, Madge C. L., New York, N. Y.
 McKinstry, G. H., Washington, Pa.
 McLoughlin, C. J. D., Atlanta, Ga.
 McRae, J. R., Toronto, Ont., Can.
- Machover, S., Pittsburgh, Pa.
 Mahoney, Florence I., Memphis, Tenn.
 Malcomson, J. E., Detroit, Mich.
 Mantz, R. L., Cedar Rapids, Iowa.
 Manuzak, H. F., St. Albans, L. I., N. Y.
 Marden, W. L., Lynn, Mass.
 Marjey, E. J., New York, N. Y.
 Markel, J. M., Detroit, Mich.
 Martella, J., Rutland Heights, Mass.
 Martin, G., Rochester, Minn.
 Marting, W. F., Ironton, Ohio.
 Martini, A. P., Eugene, Ore.
 Marton, M., New York, N. Y.
 Martucci, A. A., Abington, Pa.
 Maschmeyer, J. E., Arcadia, Cal.
 Mastellone, A. F., Silver Spring, Md.
 Mauriello, N., Wilkes-Barre, Pa.
 Mead, S., St. Louis, Mo.
 Mcamwell, W. E., Madison, Wis.
 Mehler, C. J., Pittsburgh, Pa.
 Meislin, J., Montrose, N. Y.
 Melvin, A. M., Miami, Fla.
 Menendez, J. C., New Orleans, La.
- Mennell, J. B., Rake, Liss, Hants, England.
 Mennell, J. M., Cazenovia, N. Y.
 Merker, I. H., New York, N. Y.
 Miller, R. W., Chicago, Ill.
 Miller, Ruth N., Sharon, Pa.
 Minahan, T. A., Jr., Hubbard, Ohio.
 Mitchell, N., Richmond, Va.
 Mohlo, L. D., Los Angeles, Cal.
 Molander, C. O., Chicago, Ill.
 Moor, F. B., Los Angeles, Cal.
 Moore, C. W., Fayetteville, N. C.
 Moore, R. W., Santa Monica, Cal.
 Moraes, W. R., Sao Paulo, Brazil, S. A.
 Morelewicz, H. V., Cheektowaga, N. Y.
 Moskowitz, E., Mt. Vernon, N. Y.
 Mountford, W. E., Trenton, N. J.
 Moyer, D. L., Forty Fort, Pa.
 Muss, I., Brooklyn, N. Y.
 Myers, J. L., Kansas City, Mo.
- Neifeld, H., Brooklyn, N. Y.
 Nelson, P. A., Cleveland, Ohio.
 Neufeld, I., New York, N. Y.
 Neuirth, E., Malverne, L. I., N. Y.
 Newman, L. B., Chicago, Ill.
 Newman, M. K., Detroit, Mich.
 Newman, R. W., Iowa City, Iowa.
 Nolden, W. L., Little Rock, Ark.
 Northway, W. H., San Francisco, Cal.
 Nova, F., Salvador, Bahia, Brazil, S. A.
 Nugent, O. B., Chicago, Ill.
 Nyquist, R. H., Long Beach, Cal.
- O'Connor, M. J., Newark, N. J.
 Oester, T. Y., Chicago, Ill.
 Offenthal, A. W., New York, N. Y.
 O'Reilly, D. E., St. Louis, Mo.
 Orozco, J. M., Mexico, D. F., Mex.
 Osnes, E. N., Los Gatos, Cal.
- Paley, S. M., New York, N. Y.
 Park, H. W., Fishersville, Va.
 Paul, D. M., Springfield, Mo.
 Paul, W. D., Iowa City, Iowa.
 Pedersen, V. C., New York, N. Y.
 Pedroso, F. A., Sao Paulo, Brazil, S. A.
 Peskind, S., Cleveland, Ohio.
 Peters, E. W., Cleveland, Ohio.
 Peylan, A., Tel-Aviv, Israel.
 Piaskoski, R., Wood, Wis.
 Pierson, G. M., Philadelphia, Pa.
 Polley, H. F., Rochester, Minn.
 Pollock, A. E., Altoona, Pa.
 Polmer, N. H., New Orleans, La.
 Ponemon, I. W., Jamaica, L. I., N. Y.
 Prentiss, N. H., Fort Wayne, Ind.
 Puce, A. M., Atlanta, Ga.
 Psaki, C. G., Philadelphia, Pa.
 Psaki, R. C., San Francisco, Cal.
 Pusitz, M. E., Topeka, Kans.
- Quezada, J. J., Mexico, D. F., Mex.
 Radzysimski, S. F., Cleveland, Ohio.
 Rae, J. W., Jr., Ann Arbor, Mich.
 Ralph, S., Brooklyn, N. Y.
 Rasmussen, A. T., La Crosse, Wis.
 Raus, G. M., Syracuse, N. Y.
 Rausten, D. S., Lincoln, Nebr.
 Reagan, C. H., Tuscaloosa, Ala.
 Reese, E. P., Newton Falls, Ohio.
 Reggio, A. W., Medfield, Mass.
 Reiger, A. C., Maspeth, L. I., N. Y.
 Resnick, J., Los Angeles, Cal.
 Riddles, P. W., Johnstown, Pa.
 Rieman, A., Jersey City, N. J.
 Roberts, D. A., Swannanoa, N. C.
 Roch, G. E., Willimantic, Conn.

- Rockey, V. V., Freeport, Ill.
 Rodgers, D. C., Chicago, Ill.
 Rodriguez, A. A., Chicago, Ill.
 Rose, D. L., Kansas City, Kans.
 Rosen, S. J., Pittsburgh, Pa.
 Rosenberg, H., Salt Lake City, Utah.
 Rosenberg, L., Dayton, Ohio.
 Rosenthal, H. H., New York, N. Y.
 Roth, Grace M., Rochester, Minn.
 Rothermel, E. W., Reading, Pa.
 Rubacky, J. F. A., Passaic, N. J.
 Rudd, J. L., Boston, Mass.
 Rudin, L. N., Fort Howard, Md.
 Rudolph, H. L., Reading, Pa.
 Runhaugh, U. D., Kingston, Pa.
 Rusk, H. A., New York, N. Y.
 Russek, A. S., New York, N. Y.
 Safford, F. K., Jr., New York, N. Y.
 Samberg, H. H., Des Moines, Iowa.
 Sawyer, W. C., Marion, Ohio.
 Schaeffer, J. N., Sheppard AFB, Tex.
 Schaffer, F. J., Ft. Thomas, Ky.
 Schatz, W. J., Allentown, Pa.
 Schaubel, H. J., E. Grand Rapids, Mich.
 Schembri, J., Valletta, Malta.
 Schenker, A. W., New York, N. Y.
 Schlesinger, R. A., Muskogee, Okla.
 Schmidt, W. H., Philadelphia, Pa.
 Schmitt, M. G., Chicago, Ill.
 Schuyler, S. A., Hartford, Conn.
 Schwartz, F. F., Birmingham, Ala.
 Schwartz, J. M., Flint, Mich.
 Schwartz, R. P., Rochester, N. Y.
 Schwarzschild, M., Brooklyn, N. Y.
 Scully, F. J., Hot Springs, Ark.
 Searl, H. A., McKinney, Tex.
 Selke, O. O., Jr., Houston, Tex.
 Selle, W. A., Los Angeles, Cal.
 Sexton, R. L., Washington, D. C.
 Seybold, N. J., Toledo, Ohio.
 Shapley, B. S., Corona, Flushing, N. Y.
 Shaw, J. M., Brooklyn, N. Y.
 Sheard, C., Stewartville, Minn.
 Sherman, S., Pittsburgh, Pa.
 Sherrill, A. W., Pittsburgh, Pa.
 Shields, C. D., Ft. Sam Houston, Tex.
 Shiffman, M., New York, N. Y.
 Shires, E. B., Norristown, Pa.
 Shriber, W. J., Auburn, Me.
 Smith, E., Hot Springs National Park, Ark.
 Smith, E. M., Takoma Park, Md.
 Smith, I. C., Youngstown, Ohio.
 Smith, O. E., Memphis, Tenn.
 Smith, R. T., Philadelphia, Pa.
 Snow, W. B., New York, N. Y.
 Solomon, L., Malden, Mass.
 Solomon, W. M., Cleveland, Ohio.
 Spielberg, I., Summit, N. Y.
 South, C. B., Indianapolis, Ind.
 Stansky, C., St. Petersburg, Fla.
 Stecher, R. M., Cleveland, Ohio.
 Steindler, A., Iowa City, Iowa.
 Stevenson, A. S., Orlando, Fla.
 Stevens, M. F., Cincinnati, Ohio.
 Stoll, B., Bronx, N. Y.
 Stoll, V., Far Rockaway, N. Y.
 Stone, Florence, Waukegan, Ill.
 Stonehill, T., Los Angeles, Cal.
 Stoner, F. K., Philadelphia, Pa.
 Storms, H. D., Santurce, P. R.
 Strickland, B. A., Jr., Montgomery, Ala.
 Sussman, N., Harrisburg, Pa.
 Sutch, V. J., Kerrville, Tex.
 Sverdluk, S. S., Lawrence, L. I., N. Y.
 Sweeney, F. X., Philadelphia, Pa.
 Syracuse, J. A. E., Buffalo, N. Y.
 Taliberti, R., Sao Paulo, Brazil, S. A.
 Tarbell, L. A., Hightstown, N. J.
 Tate, J. E., Hot Springs, Ark.
 Taylor, V. S., Denver, Colo.
 Tefft, B. F., West Warwick, R. I.
 Tepperberg, I., Bronx, N. Y.
 Thompson, D. L., Philadelphia, Pa.
 Tingler, J. J., Chicago, Ill.
 Titus, E. C., New York, N. Y.
 Titus, N. E., West Chester, Pa.
 Tobis, J. S., Brooklyn, N. Y.
 Tohen, A. Z., Mexico, D. F., Mex.
 Tratar, A. A., San Diego, Cal.
 Travell, W., New York, N. Y.
 Treanor, W. J., Rochester, Minn.
 Treister, B. A., Cleveland, Ohio.
 Troedsson, B. S., Orange, N. J.
 Troensegaard, C. C., Los Angeles, Cal.
 Trommer, P. R., Philadelphia, Pa.
 Twombly, G. C., Jr., Denver, Colo.
 Ulanski, B., Philadelphia, Pa.
 Valentine, L. F., North Platte, Nebr.
 Vaupel, G. E., Bethesda, Md.
 Vivino, J. J., Washington, D. C.
 Volpe, P. A., Aspinwall, Pa.
 Von Friesen, Tamara, Los Angeles, Cal.
 von Werssowetz, O. F., Nashville, Tenn.
 Waddington, J. E. G., Detroit, Mich.
 Wade, T. W., Dallas, Tex.
 Wafer, R. F., Rochester, N. Y.
 Wahlig, H. G., Sea Cliff, N. Y.
 Wahrer, F. L., Marshalltown, Iowa.
 Walker, W. A., Lewisburg, Tenn.
 Wallace, R. B., Baton Rouge, La.
 Walsh, T. E., Syracuse, N. Y.
 Warshaw, S. A., Brooklyn, N. Y.
 Watkins, A. L., Boston, Mass.
 Webb, H. P., Philadelphia, Pa.
 Weems, Rachel F., Ashland, Va.
 Weinreb, C., New York, N. Y.
 Weinstein, M. V., Brooklyn, N. Y.
 Weinzimmer, H. R., Cicero, Ill.
 Weisblum, M., Philadelphia, Pa.
 Weiss, J., Brooklyn, N. Y.
 Weissenberg, E. H., St. Louis, Mo.
 West, Catherine C., Minneapolis, Minn.
 White, A. E., San Francisco, Cal.
 Whiting, H. S., New Hyde Park, L. I., N. Y.
 Wiley, B. C., Knoxville, Tenn.
 Willgoose, Doratheia, Needham, Mass.
 Williams, C. B., Fort Bliss, Tex.
 Williams, G. D., Buffalo, N. Y.
 Willmoth, A. D., Louisville, Ky.
 Wilson, G. D., Asheville, N. C.
 Winokur, S., New Orleans, La.
 Wise, C. S., Washington, D. C.
 Witt, S. E., New York, N. Y.
 Wolf, H. F., New York, N. Y.
 Wolf, Mary Anne, New York, N. Y.
 Woodmansee, A. D., Washington Court House, Ohio.
 Worden, R. E., Columbus, Ohio.
 Worster, W. W., San Gabriel, Cal.
 Wray, R., Cedar Rapids, Iowa.
 Wright, Jessie, Pittsburgh, Pa.
 Wylie, E. J., Watertown, Mass.
 Wyman, J. F., Milwaukee, Wis.
 Yamshon, L. J., Los Angeles, Cal.
 Yanez, C. M., Habana, Cuba.
 Zankel, H. T., Cleveland, Ohio.
 Zeiter, W. J., Cleveland, Ohio.
 Zintek, S. S., Martinsburg, W. Va.

No other medical periodical gives you such "wide coverage" in the field of physical medicine and rehabilitation as **THE ARCHIVES**

If you are a teacher of physical medicine, a research worker, a physicist, or just a clinician—if you want to stay abreast of all that is new in physical medicine and rehabilitation—you must read **THE ARCHIVES**.

Each month you will find in this journal informative articles, constructive editorials, physical medicine news, announcement of new books and a wealth of abstracted material dealing with every phase of physical medicine and rehabilitation.

If you are not a subscriber to **THE ARCHIVES**—send in your subscription today. Sample copy will be sent on request. Subscription price \$7.00 per year; Canada, \$8.00; elsewhere, \$14.00 the year.

AMERICAN CONGRESS OF PHYSICAL MEDICINE,
30 No. Michigan Ave., Chicago 2.

Please find enclosed check for \$7. ☐ or bill me ☐
for one year's subscription to the ARCHIVES.

Name.....

Address.....

City, Zone and State.....

DIRECTORY

of the

AMERICAN REGISTRY of PHYSICAL THERAPISTS

is available at a cost of \$1.00



Address all communications to

AMERICAN REGISTRY OF PHYSICAL THERAPISTS

30 North Michigan Avenue

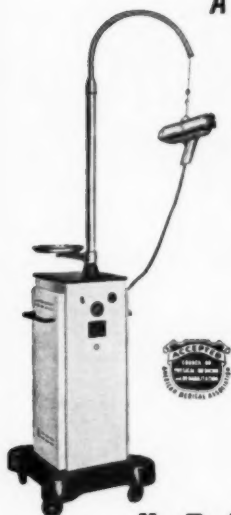
Chicago 2, Illinois

AERO-KROMAYER by HANOVIA

For accurate control in local ultraviolet application

Designed, developed and engineered specifically for highly concentrated ultraviolet therapy under accurate focus and dosage, the Aero-Kromayer has a wide field of clinical usefulness.

The Aero-Kromayer is completely air-cooled—operates in any desired position while delivering a constant, high-intensity output—and its various applicators are designed for any skin surface and orificial irradiation that may be required.



Just off the press—new booklet, "Ultraviolet Radiations in Eye, Ear, Nose and Throat Conditions," free on request. Write Dept. 306-C

HANOVIA Chemical & Mfg. Co., Newark 5, N. J.



D-491 F.C.C. TYPE APPROVED

The New
MASTER FISCHERTHERM
model 1200



**NEW FCC APPROVED
DIATHERMY**

APPROVED BY BOARD OF BUILDING AND SAFETY
COMMISSIONERS, CITY OF LOS ANGELES.

Department of Transport, Canada, Radio Division
Listed No. 47

R. A. FISCHER & CO.

517 COMMERCIAL STREET, GLENDALE 3, CALIF.

for descriptive literature

Manufacturer of ELECTRO-THERAPY EQUIPMENT

fischer

write

APPROVED SCHOOLS OF PHYSICAL THERAPY **

Council on Medical Education and Hospitals
of the American Medical Association

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Duration of Course	Classes Begin	Maxi- mum num- ber of stu- dents	Tuition	Certificate, Diploma, or Degree
Medical Department — U. S. Army (Address all inquiries to the Office of the Surgeon General, Department of the Army, Washington 25, D. C.)							
Medical Field Service School, Brooke Army Medical Center, San Antonio, Tex.	Charles F. Shields, Lt. Col., M.C.	e	49 wks.	Mar.-Sept.	26	None	Certificate
Fitzsimons Army Hospital, Denver	Charles F. Shields, Lt. Col., M.C.	Affiliated with Medical Field Service School					
Letterman Army Hospital, San Francisco, California	H. R. Luescombe, Col., M.C.	Affiliated with the Medical Field Service School					
Walter Reed Army Hospital, Washington, D. C.	Olena M. Cole, Maj., WMSC	Affiliated with Medical Field Service School					
Nonmedical	Raul G. Puck, Lt. Col., M.C.						
Childrens Hospital, Los Angeles	H. H. Kuitert, Lt. Col., M.C.						
College of Medical Evangelists, Los Angeles	Brunetta Kuehlhau, Maj., WMSC	a-b-d	14 mos.	Sept.	14	\$300	Cert. or Degree
University of Southern California, Los Angeles	S. S. Matthews, M.D.	a-b-c	16 mos.	Sept.	16	\$300	Cert. or Degree
University of California School of Medicine, San Francisco	Mrs. Mary J. Dodge	a-b-d	14 m.	Feb/Sept	16	Univer.	Cert. & Degree
Stanford University, Stanford University, Calif.	C. L. Moore, M.D.	d	12 mos.	Sept.	16	\$225*	Cert. or Degree
University of Colorado Medical Center, Denver	Charlotte W. Anderson	a-d-e	12 mos.	Varies	29	\$680	Certificate
Northwestern University Medical School, Chicago	Lucille Estine, M.D.	a-b-d	4 yrs.	Sept.	12	\$229 yr.	Cert. or Degree
State University of Iowa College of Medicine, Iowa City	W. D. Paul, M.D.	e	12 mos.	Oct.	16	\$450	Certificate
University of Kansas College of Medicine, Kansas City, Kan.	W. D. Paul, M.D.	e	12 mos.	Sept.	20	\$200	Certificate
Simmons College, Boston	D. L. Rose, M.D.	d	12 mos.	Feb/Sept	3	\$400	Certificate
Boston University College of Physical Education for Women,	Ruth G. Montebello	f	4 yrs.	Feb/Sept	8	\$400	Diploma
Sargent College, Cambridge, Mass.	Shirley C. Montebello	a-e	16 mos.	Sept.	24	College	Cert. or Degree
Boulevard School in affiliation with Tufts College, Med-	Senneth Christopher, M.D.	e-d-f	4 yrs.	Sept.	30	Univer.	Cert. or Degree
ical College, Boston	Adelaide L. McFarrell	f	1-2-4 yrs.	Sept.			
University of Minnesota, Minneapolis	Howard Moore, M.D.	e	4 yrs.	Sept.	16	\$549	Dipl. & Degree
Mayo Clinic, Rochester, Minn.	Howard Moore, M.D.	f	3 yrs.	Sept.	20	\$125	Certificate
St. Louis University, Division of Health and Hospital	F. J. Kotke, M.D.	a-b-c	3 yrs.	Sept.	38	\$250	Certificate
Services, St. Louis	Ruby Green Overmann	f	4 yrs.	Jan/Sept	12	\$175	Degree
Washington University School of Medicine, St. Louis	Harvey J. Kottke, M.D.	c	2 yrs.	Sept.	16	\$100 1st yr., \$225 2nd yr., \$300 3rd yr.	Degree
Albany Hospital, Albany, N. Y.	Sister Mary Imelda	a-b-d	12 mos.	Sept.	6	\$200	Certificate
Columbia University College of Physicians and Surgeons,	Seidwick F. Wolf, M.D.	a-b-c	4 yrs.	Sept.	10	\$880 (1 yr.) \$1,250 (2 yrs.) \$615 (3 yrs.)	Cert. & Degree
New York City	J. W. Chormley, M.D.	a	12 mos.	Sept.	40	\$350	Certificate
New York University School of Education, New York City	Catharine Graham	a-b-d	12 mos.	Oct.	12	\$200	Diploma
Duke University, Durham, N. C.	W. B. Smith, M.D.	a (-1 yr. coll.) b-d	15 mos.	Oct.	12	\$200	Certificate
Cleveland Clinic Hospital, Cleveland	Floy B. Smith, M.D.	a-b-c	12 mos.	Oct.	12	\$200	Diploma
D. T. Watson School of Physical Therapy, Lettitude, Pa.	G. G. Deaver, M.D.	a-b-d	12 mos.	Oct.	12	\$200	Diploma
Division of Physical Therapy of the School of Auxiliary	Elizabeth C. Addoms	e	12 mos.	Feb/Sept	25	\$600	Certificate
Medical Services of the University of Pennsylvania,	Helen K. Baker, M.D.	a-b-d	4 yrs.	Sept.	40	\$600	Cert. & Degree
University of Texas School of Medicine, Galveston	Walter J. Zeller, M.D.	a-b-d	12 mos.	Jan.	8	\$145*	Cert. or Degree
Hermann Hospital, Houston, Texas	Mildred Heap, M.D.	a-b-d	12 mos.	Oct.	15	\$200	Certificate
Baruch Center of Physical Medicine and Rehabilitation,	Kath. Kelly	a-b-d	12 mos.	Sept.	52	\$300*	Diploma
Medical College of Virginia, Richmond	G. M. Pierson, M.D.	a-b-d	4 yrs.	Sept.	22	\$60	Certificate
University of Wisconsin Medical School, Madison	Dorothy E. Baethke	a-b-d	12 mos.	Sept.	22	\$60	Certificate
	G. W. N. Eggers, M.D.	a-b-d	12 mos.	Jan.	8	\$145*	Cert. & Degree
	Ruby Decker	a-b-d	12 mos.	Oct.	15	\$200	Certificate
	O. O. Selzer, Jr., M.D.	a-b-d	12 mos.	Oct.	15	\$200	Certificate
	W. J. Lee, M.D.	a-b-d	4 yrs.	Sept.	52	\$300*	Diploma
	Susanne Hirt	a-b-d	12 mos.	Sept.	22	\$60	Certificate
	H. D. Bouman, M.D.	a-b-d	12 mos.	Sept.	22	\$60	Certificate
	Margaret A. Rohlf	a-b-d	12 mos.	Feb/Sept	25	\$60	Certificate

** Reprinted in part from J. A. 30: A 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

APPROVED SCHOOLS OF OCCUPATIONAL THERAPY ** Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Director and Medical Director	Entrance Requirements	Duration of Course	Classes Begin	Graduates in 1916	Tuition per Year	Certificate, Diploma, Degree
University of Southern California, Los Angeles*	Margaret S. Root	Degree	18 mos.	Varies	12	\$394	Certificate
Mills College, Oakland, Calif.	Elis. H. Hill, M.D.	High sch.	2 1/2 yrs.	FebSept	12	\$250	Certificate
San Jose State College, San Jose, Calif.*	S. M. Dorinson, M.D.	High sch.	5 yrs.	FebSept	4	\$650	Cert. & Deg.
University of Illinois College of Medicine, Chicago*	Mary D. Booth, M.D.	Degree	18 mos.	Varies	12	\$28.80	Certificate
State University of Iowa, Iowa City*	Beatrice D. Wade	High sch.	5 yrs.	MarSept	13	\$110	Degree
University of Kansas, Lawrence	S. W. Olson, M.D.	High sch.	19 mos.	FebSept	2	\$144	Certificate
Boston School of Occupational Therapy, 7 Harcourt St., Wayne University, Detroit*	Marguerite McDonald	High sch.	45 mos.	FebSept	8	\$144	Degree
Kalamazoo School of Occupational Therapy, Kalamazoo, Mich.*	Nancy B. Greenman	High sch.	5 yrs.	FebSept	16	\$135	Degree
Michigan State Normal College, Ypsilanti, Mich.*	D. L. Rose, M.D.	Degree	5 yrs.	Sept	1	\$50	Diploma
University of Minnesota, Minneapolis*	Marjorie B. Greene	High sch.	19 mos.	Varies	21	\$150	Certificate
College of St. Catherine, 204 Randolph, St. Paul	Barbara Jewett	Degree	46 mos.	FebSept	2	\$150	Diploma
Washington University School of Medicine, St. Louis*	F. A. Weiser, M.D.	High sch.	14 mos.	FebSept	23	\$72	Cert. & Deg.
University of New Hampshire, Durham*	Marion R. Spear	High sch.	5 yrs.	FebSept	6	\$87.50*	Cert. & Deg.
Columbia University College of Physicians and Surgeons, New York City*	Frances Herrick	High sch.	40 mos.	Sept	12	\$125	Degree
New York University School of Education, New York City*	V. L. VanDuzen, M.D.	High sch.	4 1/2 yrs.	Varies	34	\$125	Degree
Ohio State University, Columbus*	Borghini, M.D.	Degree	11 1/2 mos.	Sept	11	\$106	Certificate
Philadelphia School of Occupational Therapy of the School of Auxiliary Medical Services of the University of Pennsylvania, Philadelphia*	Sister Jeanne Marie	High sch.	38 mos.	Sept	8	\$106	Cert. & Deg.
Texas State College for Women, Denton	E. M. Ryan, M.D.	Degree	5 yrs.	Sept	16	\$600	Certificate
Richmond Professional Institute, 991 W. Franklin St., Richmond, Va.	Esther Drew	Degree	17 mos.	Sept	3	\$600	Certificate
College of Puget Sound, 18th and Warner Sts., Tacoma, Wash.*	W. H. Snow, M.D.	2 yrs. coll.	27 mos.	FebSept	24	\$400	Cert. & Deg.
University of Wisconsin, Madison*	Frieda J. Rehlen	High sch.	4 1/2 yrs.	Varies	18	\$30	Degree
Milwaukee-Downer College, Dept. of Occupational Therapy, 2512 E. Hartford Ave., Milwaukee	John Sawall, M.D.	Degree	18 mos.	Sept	31	\$600	Certificate
Mount Mary College, 92d and Burlington, Milwaukee	R. H. Jacques, M.D.	High sch.	15 mos.	FebSept	6	\$50	Degree
	Helen S. Willard	High sch.	5 yrs.	FebSept	4	\$125 +	Certificate
	Fanny B. Vanderkoo	Degree	10 1/2 yrs.	FebSept	5	\$250	Cert. & Deg.
	O. T. Woods, M.D.	High sch.	5 yrs.	FebSept	12	\$350	Dipl. & Deg.
	H. Elisabeth Herwick	Degree	2 yrs.	Sept	2	\$350	Cert. & Deg.
	Edna-Ellen Bell	High sch.	5 yrs.	FebSept	14	\$500	Cert. & Deg.
	A. J. Hermann, M.D.	High sch.	5 yrs.	Sept	2	\$350	Dipl. & Deg.
	Charles G. Thompson	High sch.	5 yrs.	FebSept	14	\$500	Cert. & Deg.
	Henrietta W. McNary	2 yrs. coll.	3 yrs.	Sept	2	\$350	Dipl. & Deg.
	M. C. Borman, M.D.	High sch.	5 yrs.	Sept	2	\$350	Cert. & Deg.
	Sister Mary	High sch.	5 yrs.	Sept	2	\$350	Cert. & Deg.
	J. C. Griffith, M.D.	High sch.	5 yrs.	Sept	2	\$350	Cert. & Deg.

** Reprinted J. A. M. A. 148:1104 (Mar 13) 1915.

1. Duration of course is expressed in academic years or in number of months.

2. Nonstudents charged additional fee.

* Male as well as female students admitted.

NEW MODE OF PHYSICAL THERAPY "ULTRASOUND"

WRITE OR
CALL FOR
IMPORTANT
BOOKLET
TO KEEP
POSTED ON
THIS NEW
MODALITY



EQUIPMENT
FOR SALE
OR RENT

HIGHLY
EFFICIENT
APPARATUS
SIMPLE
OPERATION

The ULTRASONOR Portable Model No. 33

ULTRASONIC MEDICAL EQUIPMENT CORPORATION
74 Lafayette Street • New York 13, N. Y. • Telephone WO rth 2-0655

CHICAGO SOCIETY OF PHYSICAL MEDICINE AND REHABILITATION

The regular monthly meeting of the Chicago Society of Physical Medicine and Rehabilitation will be held on Wednesday, April 23, 1952, at the VA Hospital, Wood, Wisconsin.

There will be conducted tours from 3 P. M. till dinner at 6 P. M., on the hospital grounds. The scientific session will begin at 7 P. M.

Dr. Ray Piaskoski will be host and principal speaker. His subject is "The Rehabilitation of Hemiplegia Patients."

Make your reservations early with the Secretary, Dr. Milton G. Schmitt, 6970 N. Clark St., Chicago 26.

Regional Officers

American Congress of Physical Medicine

EASTERN SECTION — Chairman, Nils Covalt, Rocky Hill, Conn.; Secretary, Thomas Hines, 57 Colony Street, Hamden, Conn.

MIDWESTERN SECTION — Chairman, Don J. Erickson, Rochester, Minn.; Secretary, Myron D. Lecklitner, St. Barnabas Hospital, Minneapolis, Minn.

WESTERN SECTION — Chairman, Everill Fowles, Oswego, Oregon; Secretary, Leonard Yamshon, 224 N. Serrano Ave., Los Angeles, Calif.

SOUTHEASTERN SECTION — Chairman, Odon von Werasowetz, Nashville, Tenn.; Secretary, George Wilson, 308 City Bldg., Asheville, N. C.

SOUTHERN SECTION — Chairman, Edward Krusen, Jr., Dallas, Texas; Secretary, Charles Shields, 1017 Gorgas Circle, Ft. Sam Houston, Texas.

HYDROCOLLATOR

No
Wringing
No
Dripping



**30 Minutes Moist Heat
With Each Application**

Local **MOIST HEAT** can most effectively be applied with the **HYDROCOLLATOR STEAM PACK**. Simply heat in water, lift out, wrap in towel, and apply. Special silicate gel filler absorbs and holds water to give at least 30 minutes effective moist heat with each application. Packs can be used over and over. Intelligently designed to fit any body contour. Used in many leading hospitals and clinics.

Write for literature and prices.

Chattanooga Pharmacal Co., Inc.
Chattanooga 5, Tennessee

HYDROCOLLATOR MASTER UNITS

**FOR
THE
HOSPITAL
AND
CLINIC**



Model shown: 6-Pack Model SS

Maintains a constant supply of ready-to-use Hydrocollator Steam Packs. Several patients can be treated simultaneously. Handsome stainless steel construction. Fully automatic (thermostatically controlled).

Write for literature, prices, user list.

Chattanooga Pharmacal Co., Inc.
Chattanooga 5, Tennessee

the *Vaso-Pneumatic*

PAT. PEND.



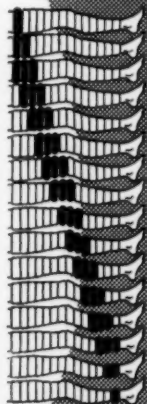
TO
Actively and Directionally
MOVE FLUIDS IN THE EXTREMITIES

A series of quickly applied neoprene cuffs are automatically inflated and deflated to produce a band of pressure that progresses up or down the arm or leg with a peristaltic motion.

Usual treatment time 15 minutes.

Here is the complete cycle requiring just 2 seconds. Inflated cuffs shown in block. ➡

Cycle repeats over and over at the rate of 20 times per minute. Direction may be reversed to travel toward the torso.



Send for complete information

POOR & LOGAN MFG. CO., 7319 Varna Ave., North Hollywood, Calif.

"I WEAR A
HANGER
LEG..."

... yet ride a bike and ice skate, and have learned to roller skate, skip, and walk down the steps foot-over-foot."

Marion Phillips, school girl, began wearing a Hanger Hip Control Leg at the age of 10. The correct fit and dependable performance of her Hanger Leg have enabled Marion to take part in the normal activities of a teen-age girl. Her amazing rehabilitation is not unusual, others have been equally successful, and most Hanger wearers are able to return to a normal active life.



HANGER ARTIFICIAL LIMBS

ATLANTA 1, GA.
BALTIMORE 1, MD.
BIRMINGHAM 1, ALA.
BOSTON 16, MASS.
CHARLESTON 2, W. VA.
CHARLOTTE 2, N. C.
CHICAGO 7, ILL.
CINCINNATI 2, OHIO
COLUMBIA, S. C.
COLUMBUS 8, OHIO
DALLAS, TEXAS
INDIANAPOLIS 2, IND.
JACKSONVILLE, FLA.
MEMPHIS, TENN.
MIAMI, FLA.
NASHVILLE, TENN.
NEW ORLEANS, LA.
NEW YORK 11, N. Y.
OKLAHOMA CITY 3, OKLA.
PHILADELPHIA 7, PA.
PITTSBURGH 30, PA.
RALEIGH, N. C.
RICHMOND 19, VA.
ROANOKE 11, VA.
SAN FRANCISCO 2, CALIF.
ST. LOUIS 3, MO.
TAMPA, FLORIDA
TOLEDO, OHIO
WASHINGTON 13, D. C.
WILKES-BARRE, PA.

MEETINGS OF INTEREST TO THOSE IN THE FIELD OF PHYSICAL MEDICINE AND REHABILITATION

In this column will be published information about meetings of interest to those in the field of physical medicine. New data should be sent promptly to the office of the ARCHIVES, 30 North Michigan Avenue, Chicago 2, Illinois.

American Congress of Physical Medicine. — 30th Annual Session, The Roosevelt, New York, New York, August 25, 26, 27, 28, 29, 1952. Walter J. Zeiter, M.D., Chairman, Convention Committee, 30 North Michigan Ave., Chicago 2.

Section on Physical Medicine and Rehabilitation of the American Medical Association. — Tuesday, Wednesday and Thursday morning of the A. M. A. meeting (June 10, 11 and 12, 1952) in Chicago. Secretary, Walter J. Zeiter, M.D., Cleveland Clinic Foundation, 2020 East 93rd St., Cleveland 6, Ohio.

Chicago Society of Physical Medicine and Rehabilitation. — Meetings, fourth Wednesday, January through May, 1952. Milton G. Schmitt, M.D., Secretary, 6970 N. Clark Street, Chicago 26.

New York Society of Physical Medicine. — Meetings, first Wednesday. Madge C. L. McGuinness, M.D., Secretary, 48 E. 62nd St., New York 21, N. Y.

The National Society for Crippled Children and Adults, Inc. — 1952 annual convention, Fairmount Hotel, San Francisco, October 26, 27, 28 and 29, 1952. Lawrence J. Linck, Executive Director, 11 South La Salle Street, Chicago 3.

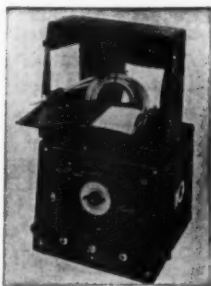
American Occupational Therapy Association. — Annual Convention, August 9-16, 1952, Milwaukee, Wisconsin, Hotel Schroeder. Marjorie Fish, OTR, Executive Director, 33 West 42nd Street, New York 18, N. Y.

American Physical Therapy Association. — Philadelphia, Pennsylvania, Bellevue-Stratford Hotel, June 23-28, 1952. Mildred Elson, Executive Director, 1790 Broadway, New York 19, N. Y.

International

International Congress of Physical Medicine (1952). London, July 14 to 19, 1952. Applications for the provisional program should be addressed to the Honorary Secretary, Dr. A. C. Boyle, International Congress of Physical Medicine (1952) 45, Lincoln's Inn Fields, London, W.C. 2.

In Rehabilitation Therapy



"... a low volt current of unusual wave characteristics ... with comparative freedom of discomfort. . . ."

Medcolator MODEL 50
STIMULATOR

Write for descriptive literature.

MEDCO PRODUCTS CO. - TULSA 12, OKLA.
3693 E. Admiral Place

MEDCO • MEDCO • MEDCO •

THE FIRST
WELCOME CRY OF

Life



In that precious instant when newborn life hangs in the balance . . . the dependable E & J resuscitator can mean victory . . . and the first welcome cry of life.

The E & J machine adjusts itself to even the tiny lungs of premature infants, signals the operator when aspiration is required to remove mucus or other foreign matter, breathe for the baby until natural breathing is firmly established. The equipment enables your hospital to take positive, effective action when there is acute danger of a newborn life slipping away forever. You may see a demonstration at no obligation...just write or phone any of the offices listed.

The Breath of Life



**RESUSCITATOR
ASPIRATOR
INHALATOR**



E & J MANUFACTURING CO.
Glendale 1, California

Sales, Service Centers: Philadelphia, Pittsburgh, Boston, New York, Chicago, Oakland, Seattle, Salt Lake, Detroit, San Antonio.

ILLE Equipment for Subaqua Hydromassage and Thermal Therapy

ILLE precision-engineered Physical Therapy Equipment—distinguished for its excellence of design, quality of materials and range of types—includes: Hydrotherapy Tank Units, Paraffin Baths, Mobile Sitz Bath, Folding Thermostatic Bed Tent, etc. Literature on request.

ILLE

ELECTRIC CORPORATION
50 Mill Road, Freeport, L. I., N.Y.

**Combination:
Hydromassage Wading
and Treatment Tank,
Model HM-1100.**



← Combination Arm, Leg, and Hip Tank, Stationary Model HM-600.



OPPORTUNITIES AVAILABLE

(Please send for our Analysis Form so we may prepare an Individual Survey for you)

WANTED — PHYSICAL THERAPISTS: (a) Chief, large teaching hospital; \$4500-\$5000. (b) Interesting opportunity with group clinic; percentage basis with minimum guarantee; winter resort city; South. (c) To join staff of visiting nurse association; university medical center; East. (d) Chief, department supervised by orthopedic surgeon, Diplomat; 350-bed hospital; medical center; South. (e) Department operated by 25-man clinic; college town; 45,000; Northwest; minimum \$350. (f) To take charge of physical therapy, student health department, large university; duties include some teaching of physical therapy to pre-physical therapy students in college of physical education and health. (g) To join staff of health department; duty primarily with pelvic apertures, working in homes of patients and in two clinics; minimum \$4200; Midwest. (h) Head department, small general hospital operated by 8-man group; Pacific Northwest. (i) Therapist experienced in general physiotherapy; large general hospital; department medically supervised by medical board physician; East. (j) Group clinic appointment; staff of eight specialists; woman preferred; will consider man; town of 60,000; Southwest. For further information, regarding these opportunities, please write Burnette Larson, Medical Bureau, Palmolive Building, Chicago.

CHANGE OF ADDRESS

Send your new address at least 30 days before the month of the issue with which it is to take effect. Address

THE ARCHIVES OF PHYSICAL MEDICINE
30 North Michigan Avenue, Chicago 2, Ill.

Send old address with the new, enclosing if possible your address label. The Post Office will not forward copies unless you provide extra postage. Duplicate copies cannot be sent.

Georgia Warm Springs Foundation GRADUATE COURSE

Physical Therapy and Occupational Therapy
in the Care of Poliomyelitis

This course is open to graduates of approved schools in physical therapy and occupational therapy. Such graduates must be members of the American Physical Therapy Association and/or the American Registry of Physical Therapists and Occupational Therapy Association.

Tuition: None. For Scholarship to Cover Transportation and Maintenance, Contact National Foundation for Infantile Paralysis, 129 Broadway, New York 5, New York.

Entrance Dates: First Monday in January, April, July and October.

Duration of Course: The Course is divided into two parts:

Part I. Over all care of convalescent polio with particular emphasis and special training in muscle testing and muscle reeducation.

Part II. Particular emphasis and special training in functional testing and functional retraining.

Each Part lasts three months and only selected students who have completed Part I will be admitted to Part II. All students applying for Part I must be willing to remain through Part II if selected.

For Information Write:

ROBERT L. BENNETT, M.D.
Georgia Warm Springs Foundation
WARM SPRINGS, GEORGIA

Wanted — A Registered Physical Therapist for 285 bed general hospital, with out patient care. Should be experienced in general physiotherapy.

Monthly salary — \$400.00.

For further information write **St. Joseph Hospital, 264 Jackson Ave., Memphis 7, Tennessee, to Dr. W. T. Howard.**

THE KABAT - KAISER INSTITUTE

at Vallejo, California, announces three months post-graduate courses for physical therapists in techniques of neuromuscular re-education. Physical therapists must be members of the American Physical Therapy Association, members of the American Registry of Physical Therapists or qualified foreign physical therapists. Courses start April 1st, July 1st, Oct. 1st, and Jan. 1st. Number of students accepted is limited. Certificate given upon successful completion of the course. Tuition: \$150.

Applicants should communicate with:

Margaret Knott
Chief Physical Therapist
KABAT-KAISER INSTITUTE
VALLEJO, CALIFORNIA

OFFICIAL INSIGNIA THE AMERICAN REGISTRY OF PHYSICAL THERAPISTS



The PIN
(About Actual Size)

The official pin is made of 1/10 carat gold with purple enamel trim.

\$5.40

(Including Federal Tax)



The EMBLEM
(Two-thirds Size)

Gold and purple on white cloth. Color fast. Each.

25c

The pin or the emblem may be obtained with "S" or "J". Cost must accompany order. (Prices subject to change without notice.)

All Prices Subject to Change Without Notice.

Address all communications to
AMERICAN REGISTRY OF PHYSICAL THERAPISTS
30 N. Michigan Ave. Chicago 2

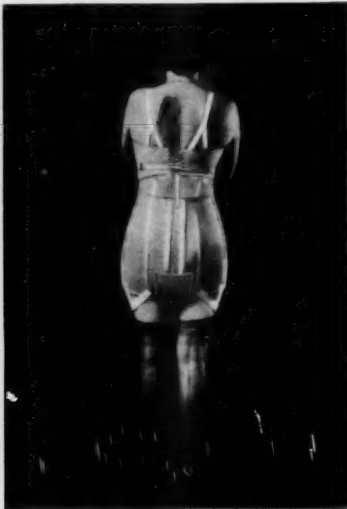
Lateral Curvature of the Spine

IN A YOUNG WOMAN



● Photograph of patient; X-Ray reveals a double lateral scoliosis with convexity toward the right at the lower dorsal and upper lumbar region.

Some rotation of the vertebral bodies, particularly in the upper lumbar region, is shown by the Roentgen Ray. The vertebral bodies and interspaces are of normal width.



● Same patient after application of Camp lumbosacral support. The orthopedic surgeon ordered reinforcement of the back of the support with aluminum upright (Hyb-lum) stays.

Patient wore a Camp prenatal support with same type of reinforcement during her pregnancy that terminated a few weeks before this orthopedic fitting.

Especially features of the lumbosacral side lacing support illustrated are as follows:

- (a) Side lacing adjustments (two in number) the lower of which gives steadiness to the pelvis.
- (b) A smooth back, allowing for reinforcement.
- (c) Curving in and under the gluteal region relieves the tension of these muscles on their attachments.

CAMP *Supports*

S. H. CAMP and COMPANY • JACKSON, MICHIGAN

World's Largest Manufacturers of Scientific Supports

Offices at: 200 Madison Ave., New York; Merchandise Mart, Chicago; Windsor, Ont.; London, Eng.

Greetings

FROM THE

NEW PLANT

ELECTRONIC . . . RESEARCH . . . DESIGN
MANUFACTURING . . . MERCHANDISING

OF

THE BIRTCHER CORPORATION

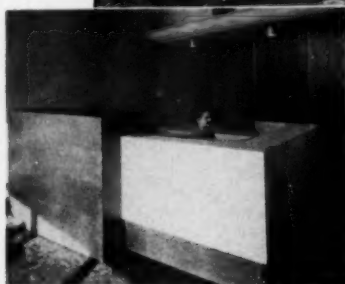


Display and Demonstration Room.

Right: Engineering Conference Room.



Dedicated to
the Welfare of
Physical Medicine



Reception.

Right: Stenographic Department.



Office of Cecil Birtcher, President.



THE BIRTCHER
Corporation

4371 VALLEY BLVD., LOS ANGELES, CALIFORNIA